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# PAPER – I

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# QUESTION PAPER 2025

1. Which of the following heart sounds are best heard with the bell of stethoscope ?
   I. Opening snap
   II. Systolic click
   III. Third heart sound
   IV. Mid diastolic murmur
   Select the correct answer using the code given below:
   (a) I and IV
   (b) II and III only
   (c) III and IV
   (d) I, II and III

2. Consider the following statements for diagnosing ventricular aneurysm in a patient with recent myocardial infarction:
   I. Paradoxical impulse on chest wall
   II. Persistent ST elevation on ECG
   III. Unusual bulge from cardiac silhouette on X-ray
   IV. Presence of pulsus paradoxsus
   Which of the above are correct?
   (a) I and II only
   (b) I and IV
   (c) I, II and III
   (d) II, III and IV

3. Which one of the following statements is correct for subcutaneous nodules in Rheumatic fever?
   (a) They are present over flexor aspect of forearm
   (b) They are painful tender nodules
   (c) The usual size of these nodules is 3-5 cm
   (d) They typically appear more than 3 weeks after onset of other clinical manifestations

4. Which one of the following is correct with regard to Carey Coombs murmur?
   (a) Soft systolic murmur due to mitral regurgitation
   (b) Soft mid-diastolic murmur due to mitral valvulitis
   (c) Harsh early diastolic murmur due to aortic regurgitation
   (d) Blowing late systolic murmur due to aortic stenosis

5. Which of the following statements is correct regarding the Opening Snap (OS) in a patient of mitral stenosis?
   (a) OS is best heard with the bell of stethoscope
   (b) Intensity of OS becomes louder when the valve is calcified
   (c) OS moves closer to the second sound (S2) as the stenosis becomes more severe
   (d) OS is best heard at the second left intercostal space

6. Which one of the following responses to intravenous adenosine is correctly matched ?
   Arrhythmia - Response
   (a) Atrial fibrillation - Termination
   (b) Atrio-ventricular nodal reentrant tachycardia - Termination
   (c) Ventricular tachycardia - Termination and complete recovery
   (d) Atrial flutter - Termination and complete recovery

7. Consider the following steps for using a metered dose inhaler (MDI) :
   I. Incline the head backward to minimize oropharyngeal deposi- tion
   II. Remove the cap and shake the inhaler
   III. Breathe out gently and place the mouthpiece into the mouth
   IV. Hold the breath for 10 seconds
   V. Simultaneously, begin a slow deep inspiration, depress the canister and continue to inhale
   Which one of the following is the correct sequence of using MDI?
   (a) III, II, I, V, IV
   (b) II, I, IV, III, V
   (c) II, III, I, V, IV
   (d) III, I, II, IV, V

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8. Under the Stepwise Approach to the management of Bronchial Asthma, which one of the following is the correct initial treatment at Step 1 for a patient diagnosed with Asthma ?
   (a) Low dose inhaled corticosteroid only
   (b) Low dose inhaled corticosteroid plus oral corticosteroid
   (c) Low dose inhaled corticosteroid plus long acting anti-muscarinic agents
   (d) Low dose inhaled corticosteroid plus leukotriene antagonist

9. A 62-year old male chronic smoker has been diagnosed with Chronic Obstructive Pulmonary Disease (COPD). On pulmonary function testing, the ratio of Forced Expiratory Volume in 1 second (FEV1) to Forced Vital Capacity (FVC) was 0.6 and FEV1 was 70% of predicted. What is the severity of airflow obstruction in this patient as per GOLD criteria ?
   (a) Stage I - Mild
   (b) Stage II - Moderate
   (c) Stage III- Severe
   (d) Stage IV - Very severe

10. Which one of the following correctly denotes the inheritance pattern of cystic fibrosis ?
   (a) Autosomal Dominant
   (b) Autosomal Recessive
   (c) X-linked Dominant
   (d) X-linked Recessive

11. Which of the following conditions are contraindications for noninvasive positive-pressure ventilation in patients with respiratory failure?
   I. Craniofacial abnormalities
   II. Significant burns
   III. Respiratory failure with $PaCO_2$ of 60 mm Hg
   IV. Cardiovascular instability
   Select the correct answer using the code given below:
   (a) I, II and III
   (b) I, II and IV
   (c) I, III and IV
   (d) II, III and IV

12. Which one of the following terms denotes the extensive sclerosis of the skin of the chest wall which restricts chest wall movement and is seen as a rare complication of systemic sclerosis ?
   (a) Flail Chest
   (b) Hidebound Chest
   (c) Barrel Chest
   (d) Pigeon Chest

13. Consider the following pleural fluid analysis:

| | |
|---|---|
| PH | 7.6 |
| Pleural fluid protein | 0.5 g/dL |
| Serum total protein | 6.5 g/dL |
| Pleural fluid LDH | 100 U/L |
| Serum LDH | 300 U/L |

   What is the most likely diagnosis ?
   (a) Pancreatitis
   (b) Myxedema
   (c) Sarcoidosis
   (d) Rheumatoid arthritis

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14. 'Masson Bodies' formed due to proliferation of immature collagen are a characteristic histopathological finding seen in which of the following conditions?
   (a) Lymphocytic Interstitial Pneumonia
   (b) Cryptogenic Organizing Pneumonia
   (c) Desquamative Interstitial Pneu- monia
   (d) Respiratory Bronchiolitis

15. Consider the following statements regarding respiratory function in old age:
   I. There is increasing ventilation- perfusion mismatch
   II. There is increased ventilatory response to hypoxia and hyper- capnia
   III. There is a decline in maximum oxygen uptake leading to reduc- tion in cardiorespiratory reserve
   IV. There is decline in the Forced Expiratory Volume to Forced Vital Capacity ratio (FEV1/FVC) by around 0.2% per year after the forties
   Which of the statements given above are correct?
   (a) I, II and III
   (b) I, II and IV
   (c) II, III and IV

(d) I, III and IV

16. Which one of the following statements is correct in respect of pulmonary involvement in rheumatoid disease?
(a) Rheumatoid pulmonary nodules are usually asymptomatic and detected incidentally on imaging
(b) Rheumatoid pulmonary nodules are often solitary and located near hilum
(c) Pleural effusion in these patients is transudative and usually bilateral
(d) Combination of pleural effusion and pneumoconiosis in these patients is known as Caplan syndrome

17. Which one of the following conditions is a complication of bacterial pharyngitis involving extension of infection into the internal jugular veins leading to thrombosis and metastatic dispersal of the organism?
(a) Cystic Fibrosis
(b) Chronic Pulmonary Aspergillosis
(c) Lemierre syndrome
(d) Wegener's granulomatosis

18. A 42-year old man with history of alcohol dependency presents with progressive abdominal distension. Abdominal examination reveals a shifting dullness. Which one of the following is the most appropriate drug to relieve this abdominal distension?
(a) Octreotide
(b) Propranolol
(c) Lactulose
(d) Spironolactone

19. Which one of the following is the investigation of choice for diagnosing the presence of stones in the gall-bladder?
(a) Transabdominal ultrasound
(b) Erect X ray of abdomen
(c) Capsule endoscopy
(d) Computed Tomography

20. Which one of the following biologic agents used in the treatment of inflammatory Bowel Disease acts by inhibiting the enzyme 'Janus Kinase'?
(a) Infliximab
(b) Adalimumab
(c) Vedolizumab
(d) Tofacitinib

21. Melanosis coli, which occurs due to long term consumption of stimulant laxatives, presents as brown dis- colouration of colonic mucosa due to deposition of which one of the following pigments?
(a) Melanin
(b) Haemosiderin
(c) Lipofuscin
(d) Haemoglobin

22. Consider the following with regard to Gilbert Syndrome:
I. Autosomal recessive trait of a mutation in gene for UDP- glucuronyl transferase enzyme
II. Elevation of unconjugated bili- rubin
III. No stigmata of chronic liver disease other than jaundice
IV. Early Liver biopsy recommended in patients with possible Gilbert Syndrome
Which of the above are correct?
(a) I and II only
(b) II and III only
(c) I, II and III
(d) III and IV

23. The single most important treatment and prognostic factor in alcohol-related liver disease is
(a) N-acetyl cysteine
(b) Cessation of alcohol consumption
(c) Liver transplantation
(d) High dose vitamin E

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**24.** A 40 year old man with a known case of chronic pancreatitis presents to the OPD with complaint of skin pigmentation over the abdomen. The patient gives a history of chronic use of a hot water bottle to relieve the abdominal discomfort. Which one of the following is the most appropriate diagnosis?
(a) Erythema infectiosum
(b) Erythema marginatum
(c) Erythema nodosum
(d) Erythema ab igne

**25.** Which one of the following is correct regarding arginine vasopressin antagonist Tolvaptan?
(a) It is useful in hypovolemic hypo- natremia
(b) It antagonises the $V_1$ receptor
(c) It should be used for at least 1 year
(d) It is an oral drug

**26.** Which one of the following conditions is caused by mutations in the gene that encodes the sodium-potassium- 2-chloride cotransporter (NKCC2), and presents with sodium wasting, hypokalaemia, hypomagnesaemia and hypercalciuria?
(a) Alport syndrome
(b) Bartter syndrome
(c) Fanconi syndrome
(d) Gitelman syndrome

**27.** A 52 year old male has uncontrolled diabetes. Which one of the following tests will help in early detection of nephropathy?
(a) Blood urea level
(b) Serum creatinine level
(c) Ultrasonography
(d) Urine albumin

**28.** Autosomal dominant mutations in which one of the following genes may cause focal segmental glomerulosclero- sis associated with abnormal genitalia, Wilm's tumour and mental retardation?
(a) WT1
(b) INF2
(c) LMX1B
(d) APOLI

**29.** Kidney damage and Glomerular Filtration Rate (GFR) value between $15-29\ \mathrm{mL/min/1 \cdot 73\ m^2}$ are found in which stage of Chronic Kidney Disease?
(a) Stage 2 (mild)
(b) Stage 3A (mild to moderate)
(c) Stage 4 (severe)
(d) Stage 5 (kidney failure)

**30.** Which one of the following hereditary tubulo-interstitial kidney diseases has an autosomal recessive mode of inheritance?
(a) Medullary cystic kidney disease type 1
(b) Medullary cystic kidney disease type 2
(c) Nephronophthisis
(d) Juvenile hyperuricaemic nephro- pathy

**31.** Which of the following findings in a patient are suggestive of acute nephritis ?
I. Hematuria
II. Oliguria
III. Reduced size of both kidneys
IV. Edema
Select the correct answer using the code given below:
(a) I and III
(b) III and IV
(c) I and II only
(d) I, II and IV

**32.** A 35 year old male presents with increased urine output. On evaluation, his urinary output was around 4L/day; urinary osmolality was 200 mosmol/L Which of the following are various differential diagnosis ?
I. Psychogenic polydipsia
II. Solute diuresis
III. Central diabetes insipidus
IV. Nephrogenic diabetes insipidus
Select the correct answer using the code given below :
(a) I, III and IV
(b) I and III only
(c) II and IV
(d) I and IV only

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**33.** Contralateral Homonymous upper quadrantanopia is the type of visual loss seen when the lesion is located at which one of the following anatomical locations?
(a) Frontal lobe
(b) Temporal lobe
(c) Parietal lobe
(d) Occipital lobe

**34.** Which of the following are clinical features of migraine ?
I. It is associated with dilatation of extracranial vessels
II. Common migraine is seen without Aura
III. Aura is most often visual
Select the correct answer using the code given below:
(a) I, II and III
(b) I and II only
(c) II and III only
(d) I and III only

**35.** A 50 year old man presents with brief episodes of lancinating unilateral facial pain, involving the buccal distribution. Pain is triggered by washing face with cold water. What is the most likely diagnosis ?
(a) Migraine
(b) Medication overuse headache
(c) Chronic paroxysmal hemicrania
(d) Trigeminal neuralgia

**36.** Which of the following are trigger factors for seizures?
I. Sleep deprivation
II. Missed doses of antiepileptic drugs
III. Recreational drug misuse
IV. Physical exhaustion
Select the correct answer using the code given below:
(a) II and III only
(b) I and IV only
(c) I, II and III only
(d) I, II, III and IV

**37.** Which one of the following childhood epileptic disorders often needs long term treatment with anti epileptic drugs?
(a) Benign neonatal seizures
(b) Febrile seizures
(c) Benign rolandic epilepsy
(d) Juvenile myoclonic epilepsy

**38.** Which of the following are clinical features of Parkinson's disease?
I. Reduced eye blinking
II. Drooling of saliva
III. Soft voice
IV. Macrographia
Select the correct answer using the code given below:
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II, III and IV

**39.** A 35 year female presents with easy fatigability. Investigations show that Hb is 6 g%; Red cell morphology is normocytic normochromic; and reticulocyte production index is 5.5. Which one of the following conditions favours this abnormality ?
(a) Iron deficiency anemia
(b) Sideroblastic anemia
(c) Folate deficiency
(d) Intravascular hemolysis

**40.** A 46 year old lady on vegan diet for a decade presents with chief complaints of tingling and numbness in lower limbs for two months and a history of swaying while walking through narrow corridors. Which one of the following blood tests is advisable for diagnosis in this patient?
(a) Serum protein electrophoresis
(b) Anti-gliadin antibodies
(c) Vitamin 25(OH) D level
(d) Vitamin B12 levels

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**41.** Which one of the following causes low-volume erythrocytosis?
(a) Polycythemia Rubra Vera
(b) Exogenous testosterone therapy

(c) Gaisbock's syndrome
(d) High altitude

**42.** First line therapy in chronic phase of chronic myeloid leukemia is
(a) Rituximab
(b) Thalidomide
(c) Imatinib
(d) Chlorambucil

**43.** With regard to management of idiopathic thrombocytopenic purpura, consider the following statements:
I. All patients with ITP with platelet count less than $100 \times 10^9$/L should receive high dose of glucocorti- coids
II. For patient with spontaneous bleeding, 40 mg of dexametha- sone daily is indicated for 4 days
III. Intravenous immunoglobulin can raise the platelet count
IV. Life threatening bleeding should be treated with platelet transfusion
Which of the statements given above are correct?
(a) I, II and III
(b) II, III and IV
(c) I, III and IV
(d) I, II and IV

**44.** Which of the following drugs can cause secondary weight gain?
I. Insulin
II. Propranolol
III. Orlistat
IV. Thyroxine
Select the correct answer using the code given below:
(a) I, II and IV
(b) I and III
(c) II, III and IV
(d) I and II only

**45.** Under which one of the following conditions, the HPA axis suppression is likely to result in crisis due to adrenal insufficiency following withdrawal of glucocorticoids?
(a) If glucocorticoids have been given by intravenous route for five days
(b) If glucocorticoids have been administered orally for one week
(c) If glucocorticoids have been prescribed repeatedly within the previous year
(d) If the dose is less than equivalent of 5 mg prednisolone per day

**46.** Wilson's disease has which of the following inheritance?
(a) X-linked recessive
(b) Autosomal dominant
(c) Autosomal recessive
(d) It is an acquired disease

**47.** Which of the following can be used for the management of severe hyper- kalaemia?
I. Intravenous calcitonin
II. Intravenous sodium bicarbonate
III. Oral sodium polystyrene sulphate
IV. Intravenous calcium gluconate
Select the correct answer using the code given below:
(a) I, II and IV
(b) II, III and IV
(c) I and II only
(d) I and IV only

**48.** Which one of the following conditions can cause euvolaemic hyponatraemia ?
(a) Adrenocortical failure
(b) Hypothyroidism
(c) Nephrotic syndrome
(d) Burns

**49.** Which one among the following vectors transmits the filaria Loa Loa?
(a) Simulium
(b) Chrysops
(c) Cyclops
(d) Culicoides

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**50.** Which of the following is the most favourable prognostic parameter in Bell's palsy?
(a) Incomplete paralysis in the first week
(b) Mild CSF lymphocytosis
(c) Denervation in EMG after 10 days
(d) Pain behind the ear

**51.** Which one of the following groups of drugs is ineffective against gram positive bacteria?
(a) Monobactams
(b) Glycopeptides
(c) Fluoroquinolones
(d) First generation cephalosporins

**52.** Which one of the following statements is correct regarding leprosy ?
(a) Type 1 Leprosy Reaction is also called erythema nodosum lepro- sum
(b) Type 2 Leprosy Reaction is an immune complex mediated syn- drome called arthus phenomenon
(c) 'Lion face' appearance is seen in tuberculoid leprosy
(d) Nose is the last site of involve- ment in lepromatous leprosy

**53.** A 56 year old gardener presents with an ulcerative nodule with purulent discharge on his right index finger. He had a prick with a thorn, at the same site around a month back. Which one of the following infections is most likely?
(a) Chromoblastomycosis
(b) Mycetoma
(c) Phaeohyphomycosis
(d) Sporotrichosis

**54.** A 36 year old man presents with decreased apetite, mouth soreness, diarrhoea and irritability. On examina- tion he has a bright red tongue with a pigmented scaly rash around the neck. Which one of the following food items in his diet has a bearing on his disease?
(a) Rice
(b) Wheat
(c) Corn
(d) Fish

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**55.** Acrodermatitis enteropathica is an autosomal recessive metabolic disorder which affects the absorption of which one of the following micronutrients?
(a) Iodine
(b) Zinc
(c) Iron
(d) Selenium

**56.** Consider the following statements with regard to the treatment of vitamin A deficiency:
I. Repeated high doses of retinol can cause liver damage and terato- genicity
II. Acute overdose of vitamin A may lead to increased intracranial pressure and skin desquamation
III. Regular vitamin A supplementa- tion is also recommended for pregnant women even in countries where vitamin A deficiency is not endemic
IV. Excessive intake of carotene may cause harmless orange pigmenta- tion of the skin
Which of the statements given above are correct?
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II, III and IV

**57.** Koebner phenomenon is seen in which one of the following conditions?
(a) Psoriasis
(b) Acne Vulgaris
(c) Bechet's disease
(d) Leprosy

**58.** Consider the following regarding the human hair growth cycle:
I. Anagen is a phase of active hair growth
II. Telogen is a transitional phase
III. Catagen is a resting phase
Which of the statements given above is/are correct?
(a) I only
(b) III only
(c) I and II only
(d) I, II and III

**59.** Consider the following statements regarding oculocutaneous albinism:
I. The disease results from genetic abnormalities leading to destruc- tion of melanocytes
II. Type 1 albinism is due to a defect in the tyrosinase gene
III. Patients may present with poor vision, rotator nystagmus and alternating strabismus
IV. Patients are at an increased risk of sunburn or developing skin cancer
Which of the statements given above are correct?
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II, III and IV

**60.** A 42 year old man presented with recurrent oral ulcers since one year, episodes of redness of eye and genital ulcers. Which one of the following tests is of diagnostic value ?
(a) Mantoux test
(b) Drug-sensitivity test
(c) Pathergy test
(d) Patch test

**61.** Which of the following joints are commonly affected in osteoarthritis ?
I. First metatarsophalangeal joint
II. Proximal interphalangeal joint
III. Ankle joint
IV. 5th and 6th cervical vertebrae joint
Select the correct answer using the code given below:
(a) I and II only
(b) III and IV only
(c) I, II and IV only
(d) I, II, III and IV

**62.** Which of the following are causes of reversible dementia?
I. Hypothyroidism
II. Vitamin B12 deficiency
III. Dementia with lewy body
IV. Thiamine deficiency
Select the correct answer using the code given below:
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II, III and IV

**63.** Which of the following are clinical features of Fronto-Temporal dementia?
I. Personality change
II. Language disturbance
III. Memory may be preserved in early stages
IV. Anti-cholinesterases are the drug of choice for treatment
Select the correct answer using the code given below:
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II, III and IV

**64.** Which one of the following is the myelinating cell of Central Nervous System ?
(a) Astrocyte
(b) Microglia
(c) Schwann cell
(d) Oligodendrocyte

**65.** Which one of the following is the correct description of Mee's lines, seen in chronic arsenic poisoning?
(a) Transverse white lines on nails of fingers and toes
(b) Transverse red lines on the skin of palms and soles
(c) Transverse white lines on the skin of palms and soles
(d) Transverse red lines on the nails of fingers and toes

**66.** Fomepizole is an antidote used to treat poisoning from which of the following substances?
I. Methanol
II. Digoxin
III. Cocaine
IV. Ethylene glycol
Select the correct answer using the code given below:
(a) I and II

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(b) II and III
(c) III and IV
(d) I and IV

**67.** The 4A Test is a screening tool for detection of delirium. Which of the following parameters are included in the 4AT tool?
I. Alertness
II. Apnoea
III. Abbreviated Mental Test (AMT4)
IV. Attention
Select the correct answer using the code given below:
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II, III and IV

**68.** Which of the following combina- tions of lab test results is indicative of heavy alcohol consumption, with more than 60% sensitivity and specificity?
(a) Gamma glutamyl transferase (GGT)>35 U/L and alkaline phosphatase >45 U/L
(b) Carbohydrate-deficient transferrin (CDT)>20 U/L and serum uric acid<7 mg/dL
(c) High normal MCV>91 fL and CDT<20 U/L
(d) GGT>35 U/L and CDT>20 U/L

**69.** What is the antidote for belladonna poisoning?
(a) Physostigmine
(b) Amitriptyline
(c) Atropine
(d) Flumazenil

**70.** Which one of the following prevents gastrointestinal absorption of thallium?
(a) Calcium carbonate
(b) Prussian blue
(c) Penicillamine
(d) Potassium permanganate

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**71.** A 45 year old farmer came with accidental consumption of a pesticide. He complained of frequent urination and excessive salivation. Which one of the following toxidromes is most likely to be associated with this poisoning?
(a) Serotonergic
(b) Cholinergic
(c) Adrenergic
(d) Hypnotic

**72.** Consider the following regarding salicylate poisoning:
I. Arterial pH of 7-25, anion gap of 18 mmol/L
II. Arterial pH of 7.25, anion gap of 10 mmol/L
III. $pCO_2$ of 20 mm Hg
IV. $pCO_2$ of 48 mm Hg
Which disturbance is likely to be encountered?
(a) I and III
(b) II and III
(c) I and IV
(d) II and IV

**73.** Which of the following statements are typical for classic heat stroke?
I. Older patient
II. Normokalemia
III. Hyponatremia
IV. Marked lactic acidosis
Select the correct answer using the code given below:
(a) I and III
(b) I and II
(c) III and IV
(d) II and IV

**74.** Which of the following statements are correct regarding Weil's disease?
I. It is caused by a virus named leptospira
II. Acute kidney injury can lead to oliguria in this disease
III. Microscopic agglutination is the investigation of choice
IV. Ceftriaxone given parenterally is effective treatment
Select the correct answer using the code given below:
(a) I, II and III
(b) II, III and IV

(c) I, II and IV
(d) I, III and IV

**75.** Which of the following are com- ponents of SOFA scoring system ?
I. $PaO_2/FiO_2$ ratio
II. Mean arterial pressure
III. Glasgow coma scale
IV. Prothrombin Time with INR
Select the correct answer using the code given below:
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II, III and IV

**76.** What are the components to establish the diagnosis of Brain Death?
I. Absent brain stem reflexes
II. Apnoea in presence of elevated $PCO_2$
III. Hypothermia
IV. Irreversible and unresponsive coma
Select the correct answer using the code given below:
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II and IV only

**77.** The most common cause for non- traumatic sub-arachnoid haemorrhage is
(a) A-V malformation
(b) Saccular aneurysm rupture
(c) Extension from primary intra- cerebral haemorrhage
(d) Idiopathic

**78.** Peri-operative respiratory failure is an example of
(a) Type I respiratory failure
(b) Type II respiratory failure
(c) Type III respiratory failure
(d) Type IV respiratory failure

**79.** The murmur of mitral regurgitation is best heard at
(a) Tricuspid area
(b) Aortic area
(c) Cardiac apex
(d) Pulmonary area

**80.** A 28 year female presented to emer- gency with fever, agitation and delirium. She was on regular medica- tion of Carbimazole 40 mg daily, but missed her doses for the last 2 days. Which of the following scoring systems would you like to do to assess severity of disease?
(a) DAS 28 score
(b) Burch-Wartofsky score
(c) Expanded Disability Status Scale
(d) Sequential Organ Failure Assess- ment Score

**81.** Out of the following areas of brain, which area is most commonly affected on brain imaging in Wilson's disease?
(a) Cerebellum
(b) Sub-cortex
(c) Thalamus
(d) Basal ganglia

**82.** Which of the following are secondary iron overload conditions?
I. Transfusion related iron load
II. Thalassemia
III. Hepatitis C associated liver disease
Select the correct answer using the code given below:
(a) I, II and III
(b) I and II only
(c) II and III only
(d) I and III only

**83.** Which of the following are features of Alzheimer's disease?
I. It is a disorder of cerebral cortical function
II. Only short term memory is affected
III. Patients deny that there is any- thing wrong
IV. Depression is commonly present
Select the correct answer using the code given below:
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II, III and IV

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84. Glymphatics is the lymphatic like structure of which system?
(a) Central Nervous System
(b) Respiratory
(c) Renal
(d) Gastro-intestinal

85. Which one of the following state- ments is correct in the diagnosis of Giardiasis?
(a) Stool sample at 2-3 days interval should be examined for cysts
(b) String test is done to find out cysts of Giardia lamblia
(c) Jejunal biopsy samples can show presence of larvae of Giardia lamblia
(d) Cystic form of Giardia lamblia remains viable in water upto 1 week only

86. In clinical assessment of an elderly patient, 'the get up and go test' is used to evaluate which of the following?
(a) Gait and balance
(b) Cognition
(c) Driving ability
(d) Urinary incontinence

87. Treatment of first choice in acute Gout is
(a) Oral Methotrexate
(b) Oral Colchicine
(c) Allopurinol
(d) Sulfasalazine

88. A 56 year male came with acute onset breathlessness and found to have pneumothorax. The resident doctor decided to insert intercostals drain. Which one of the following sites is suitable for such a procedure ?
(a) Hesselbach's triangle
(b) Petilis triangle
(c) Triangle of safety
(d) Triangle of auscultation

89. Which one of the following is an antidote for Rivaroxaban and Apixaban, when reversal of anticoagulation is needed due to uncontrolled bleeding?
(a) Idarucizumab
(b) Andexanet Alfa
(c) Hydroxocobalamin
(d) Glucarpidase

90. Which of the following are included in common causes of mediastinal masses in superior and anterior mediastinum?
I. Goitre
II. Thymic tumour
III. Neurogenic tumour
Select the correct answer using the code given below:
(a) I and II only
(b) II and III only
(c) I and III only
(d) I, II and III

91. Which one of the following is used to reverse the anticoagulant effects of Dabigatran ?
(a) Glucarpidase
(b) Desferrioxamine
(c) Idarucizumab
(d) Protamine

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92. Which one of the following is contra- indication of doing a wireless capsule endoscopy?
(a) Coeliac disease
(b) Small bowel stricture
(c) Obscure gastrointestinal bleeding
(d) Small bowel Crohn's disease

93. Which one of the following is the causative organism of Erythrasma, a mild, localized and superficial skin infection?
(a) Corynebacterium pseudo tuber- culosis
(b) Corynebacterium minutissimum
(c) Corynebacterium diphthariae
(d) Corynebacterium matruchotii

**94.** Which one of the following is correctly matched regarding classification of portal hypertension according to site of vascular obstruction?
(a) Sinusoidal - Veno-occlusive disease
(b) Pre-hepatic presinusoidal - Portal vein thrombosis
(c) Intraheptic presinusoidal - Cirrhosis
(d) Post-hepatic post sinusoidal - Schistosomiasis

**95.** Which one of the following is a secondary cause of headache ?
(a) Migraine
(b) Tension-type headache
(c) Trigeminal autonomic cephalalgia
(d) Medication overuse headache

**96.** A 32 year old man presents with history of recurrent jaundice over the previous decade. Family gives history of the patient having episodes of facial grimacing. Which one of the following is a clinical clue to the diagnosis?
(a) Adenoma sebaceum in the mid face
(b) Erythema nodosum on the skin
(c) Kayser-Fleisher rings in the cornea
(d) Olser's nodes at the finger tips

**97.** Which of the following are causes of secondary immunodeficiency in children?
I. Diphenylhydantoin
II. Severe malnutrition
III. Post-varicella state
IV. Nephrotic syndrome
Select the correct answer using the code given below:
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II, III and IV

**98.** Which of the following statements are correct regarding vaccination routes for children?
I. Hepatitis B vaccine given in del- toid region has reduced efficacy
II. Two vaccines may be given in the same thigh, but separated by 1 inch
III. Separate sites are used when administering a vaccine and an immunoglobulin
IV. Two intramuscular vaccines may be given on the same day but in separate limbs
Select the answer using the code given below:
(a) III only
(b) I and III
(c) II and III
(d) I and IV

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**99.** A radiopaque density may be noticed in poisoning by which of the following agents ?
(a) Phenazopyridine
(b) Ethylene glycol
(c) Chloroquine
(d) Chloral hydrate

**100.** Which of the following syndromes are caused due to genomic imprinting?
I. Rubinstein Taybi syndrome
II. Prader-Willi syndrome
III. Angelman syndrome
IV. Edward syndrome
Select the correct answer using the code given below:
(a) I and III
(b) II and III
(c) II and IV
(d) I and IV

**101.** As per POCSO (Protection of Children from Sexual Offences) Act 2012, sexual assault is considered aggravated when
I. the abuse involves use of physical violence
II. the abused child is disabled
III. the abuse is committed by staff of an educational institution
IV. the abuse is committed by an immediate family member/first degree relative
Which of the above are correct?
(a) I and IV
(b) I and III
(c) II and III
(d) II and IV

**102.** The mother of a 14-month-old normally developing baby comes to you for feeding advice. Which of the following would be appropriate for her as per the IMNCI (Integrated Management of Neonatal and Childhood Illness) Program?
I. Breastfeed as often as the child wants
II. Keep the child in your lap and feed with your own hands
III. Offer food from the family pot
IV. Give 3 to 4 meals each day
Select the correct answer using the code given below:
(a) II, III and IV
(b) I, III and IV
(c) I, II and III
(d) I, II and IV

**103.** For a sick child aged 4 years, which of the following are signs of "severe pneumonia or very severe disease", as per IMNCI (Integrated Management of Neonatal and Childhood Illness) Program?
I. Fast breathing (Greater than or equal to 40 breaths per minute)
II. Child vomits everything
III. Stridor in a calm child
IV. Chest indrawing
Select the correct answer using the code given below:
(a) I and II
(b) II and III
(c) III and IV
(d) II and IV

**104.** In a child aged $3\frac{1}{2}$ years with an ear problem which one of these situations merits urgent referral to hospital?
(a) Pus seen draining from the ear, and discharge reported for less than 14 days
(b) Pus seen draining from the ear, and discharge reported for more than or equal to 14 days
(c) Tender swelling behind the ear
(d) Pus seen draining from both ears, irrespective of duration

**105.** Upto 10% of cases of Autism Spectrum Disorder (ASD) may be caused by genetic conditions. Which of the following are known to be associated with ASD?
I. Tuberous sclerosis
II. Fragile X syndrome
III. Prader-Willi syndrome
IV. Patau syndrome
Select the correct answer using the code given below:
(a) I and II
(b) I and III
(c) II and III
(d) I and IV

**106.** Which of the following are charac- teristic features of cerebral palsy?
I. Disorder of movement
II. Permanent nature
III. Progressive course
IV. Disorder of posture
Select the correct answer using the code given below:
(a) I, II and III
(b) I, II and IV
(c) II, III and IV
(d) I, III and IV

**107.** Which of the following are the tools used for classification of spasticity in a child with cerebral palsy?
I. Gross Motor Function Classification System
II. Medical Research Council System
III. Modified Connors Scale
IV. Modified Ashworth Scale
Select the correct answer using the code given below:
(a) I and II
(b) II and III
(c) III and IV
(d) I and IV

**108.** Which of the following medications may be used in a child diagnosed with Attention Deficit Hyperactivity Disorder?
I. Carbamazepine
II. Methylphenidate

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III. Atomoxetine
IV. Clonazepam
Select the correct answer using the code given below :
(a) I and III
(b) II and III
(c) II and IV
(d) I and IV

**109.** Which of the following are included as a "Deficiency" under the Rashtriya Bal Swasthya Karyakram (RBSK)?
I. Hypothyroidism
II. Vitamin A deficiency
III. Anemia
IV. Vitamin D deficiency
Select the correct answer using the code given below:
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II, III and IV

**110.** Which of the following statements are correct regarding management of hyperkalemia in a child?
I. Intravenous calcium (gluconate or chloride) is given to enhance cellular uptake of potassium
II. Beta adrenergic agonists (salbuta- mol or terbutaline) are used to stabilize myocardial cell mem- brane
III. Regular insulin and glucose given intravenously enhance cellular uptake of potassium
IV. Sodium polystyrene sulfonate enhances total body potassium elimination
Select the answer using the code given below:
(a) I and II
(b) II and III
(c) I and IV
(d) III and IV

**111.** Which of the following statements are correct about oral rotavirus vaccines ?
I. The storage should be at $2 - 8^{\circ}C$
II. The vaccine should be used within 2 hours of reconstitution or opening
III. Past history of intussusception is a contraindication
IV. The vaccine can be given if the baby has ongoing diarrhoea
Select the answer using the code given below:
(a) I and II
(b) III and IV
(c) I and III
(d) II and IV

**112.** A child can make a tower of 3 blocks, runs, copies his mother while sweeping and has a vocabulary of 8-10 words. His developmental age is
(a) 12 months
(b) 15 months
(c) 18 months
(d) 24 months

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**113.** A child can ride a tricycle, copies a circle, knows name and gender. The developmental age of this child is
(a) 2 years
(b) 3 years
(c) 4 years
(d) 5 years

**114.** A teen boy with birth weight of 2-8 kg is born to a primigravida mother through vaginal delivery and cried immediately after birth. Which of the following statements are correct regarding his initial care after birth?
I. The baby should be initiated on breastfeeding within one hour of birth
II. The baby should be kept in a separate area from the mother
III. The baby should be administered with 0-5 mg of vitamin K intra- muscularly
IV. The baby should be thoroughly examined for congenital malformations from head to toe
Select the answer using the code given below:
(a) I and II
(b) I and III
(c) II and III
(d) I and IV

**115.** Which one of the following oral drugs may be used in the management of super-refractory status epilepticus?
(a) Clonazepam
(b) Clobazam
(c) Lamotrigine
(d) Topiramate

**116.** Which of the following statements are correct regarding the use of benzo- diazepines in the initial management of status epilepticus?
I. Upto two doses may be used 5 minutes apart, if seizures are not controlled
II. For Lorazepam, only a single dose should be used, even if seizures are not controlled
III. Dose of midazolam at this stage is $1\text{–}15\ \mu g/kg/\min$ infusion
IV. Dose of both lorazepam and midazolam is $0.1\ \text{mg/kg}$
Select the answer using the code given below:
(a) I and III
(b) I and IV
(c) II and III
(d) II and IV

**117.** Which of the following statements are correct regarding hypernatremia in children?
I. Diabetes insipidus due to a defi- ciency of antidiuretic hormone (ADH) may cause hypernatremia
II. Addison disease may be asso- ciated with hypernatremia
III. Use of boiled skimmed milk can lead to hypernatremia
IV. Use of lactulose can lead to hypernatremia
Select the answer using the code given below:
(a) I, III and IV
(b) II, III and IV
(c) I, II and III
(d) I, II and IV

**118.** Which of the following statements are correct regarding the management of gastrointestinal bleeding in children?
I. Somatostatin or octreotide infu- sion should be given for at least 7 days after stoppage of initial bleeding to prevent rebleeding
II. Endoscopic Sclerotherapy (EST) involves endoscopic injection of N-butyl-2-cyanoacrylate or iso- butyl-2-cyanoacrylate
III. EST has upto 90% efficacy in controlling acute bleeding
IV. Following an episode of acute variceal bleeding, all patients should receive secondary prophy- laxis to prevent rebleeding
Select the answer using the code given below:
(a) I and II
(b) I and III
(c) III and IV
(d) II and IV

**119.** Which of the following are advantages of endotracheal intubation, in a child requiring pediatric advanced life support?
I. Inspiratory time can be controlled
II. Positive end-expiratory pressure can be provided
III. Peak expiratory pressure can be controlled
IV. Reduced risk of aspiration of gastric contents
Select the correct answer using the code given below:
(a) I, II and III
(b) I, II and IV
(c) I, III and IV
(d) II, III and IV

**120.** Which of the following are causes of hypocalcemia in a child?
I. Hypomagnesemia
II. Hypophosphatemia
III. Metabolic acidosis
IV. Pseudohypoparathyroidism
Select the correct answer using the code given below :
(a) I and II
(b) II and III
(c) III and IV
(d) I and IV

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# PAPER 2025 ANSWERS

1. (c) III and IV

The bell of the stethoscope is designed to pick up low-frequency (low-pitched) sounds, while the diaphragm is used for high-frequency (high-pitched) sounds. The Third heart sound (S3) is a low-pitched sound that occurs during the rapid ventricular filling phase of early diastole. Similarly, the Mid-diastolic murmur, such as the characteristic rumble of mitral stenosis, is a low-frequency sound. Both of these are best appreciated by applying the bell lightly to the chest wall, typically at the cardiac apex. In contrast, the Opening Snap (OS) of mitral stenosis is a sharp, high-pitched sound that occurs after S2 and is best heard with the diaphragm. Systolic clicks, whether they are ejection clicks (like in aortic stenosis) or non-ejection clicks (like in mitral valve prolapse), are also high-frequency events. Therefore, the only two options that represent low-pitched sounds best heard with the bell are the third heart sound (III) and the mid-diastolic murmur (IV).

2. (c) I, II and III

A ventricular aneurysm is a complication of a transmural myocardial infarction, where a thinned, fibrotic, and dyskinetic segment of the ventricle wall bulges outward. Its diagnosis is based on a constellation of clinical and imaging findings. A paradoxical impulse on the chest wall (I), which moves outward during systole when the rest of the ventricle contracts, is a classic physical finding. On an electrocardiogram (ECG), the most characteristic finding is persistent ST-segment elevation (II) in the leads corresponding to the infarct, weeks to months after the acute event. This occurs due to the persistent abnormal electrical potential from the scarred, non-contractile tissue. A chest X-ray may also be suggestive, showing an unusual bulge or altered contour of the cardiac silhouette (III). Pulsus paradoxus (IV), which is an exaggerated drop in systolic blood pressure (>10 mmHg) during inspiration, is not a feature of ventricular aneurysm. Instead, it is a hallmark of cardiac tamponade and is also seen in severe obstructive lung disease and constrictive pericarditis. Therefore, statements I, II, and III are the correct diagnostic features.

3. (d) They typically appear more than 3 weeks after onset of other clinical manifestations

Subcutaneous nodules are a major Jones criterion for acute rheumatic fever (ARF). These nodules are firm, mobile, and characteristically painless. Option (d) is the correct statement because these nodules are a late manifestation of the disease. They usually appear several weeks (more than 3 weeks) after the onset of carditis or polyarthritis, often correlating with the presence of significant rheumatic carditis. Option (a) is incorrect because the nodules are typically found over extensor surfaces and bony prominences, such as the elbows, knees, ankles, and occiput, not the flexor aspect of the forearm. Option (b) is incorrect; a key diagnostic feature is that these nodules are painless and non-tender, which helps distinguish them from other conditions like rheumatoid arthritis. Option (c) is also incorrect, as the nodules are typically small, usually ranging in size from 0.5 to 2 cm. Nodules of 3-5 cm would be unusually large for ARF.

4. (b) Soft mid-diastolic murmur due to mitral valvulitis

The Carey Coombs murmur is a specific cardiac finding associated with the acute carditis of rheumatic fever. It is correctly described as a soft, low-pitched, mid-diastolic murmur that is best heard at the cardiac apex. This murmur is not caused by a fixed, structural valve stenosis. Instead, it is generated by the acute inflammation and edema of the mitral valve leaflets (mitral valvulitis). This swelling of the leaflets creates a temporary, relative obstruction to blood flow from the left atrium into the left ventricle during the diastolic filling phase. This murmur is often transient and typically resolves as the

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acute inflammation of the valve subsides with treatment. Option (a) is incorrect; the murmur of mitral regurgitation is pansystolic. Option (c) describes the murmur of aortic regurgitation. Option (d) incorrectly describes both the timing and quality of an aortic stenosis murmur, which is typically a harsh ejection-systolic murmur.

5. (c) OS moves closer to the second sound (S2) as the stenosis becomes more severe

The Opening Snap (OS) is a high-pitched, sharp sound that occurs in early diastole due to the sudden tensing of the stenotic but still mobile mitral valve leaflets as they open. The timing of the OS relative to the second heart sound (S2) is a crucial indicator of the severity of mitral stenosis (MS). As the stenosis becomes more severe, the pressure in the left atrium increases. This higher atrial pressure forces the mitral valve to open earlier in diastole. Consequently, the OS moves closer to S2. A short S2-OS interval indicates severe MS. Option (a) is incorrect because the OS is a high-pitched sound and is therefore best heard with the diaphragm of the stethoscope, not the bell. Option (b) is incorrect; as the valve becomes more calcified and rigid, its mobility decreases, causing the OS to become softer and eventually disappear. A loud OS implies a pliable, non-calcified valve. Option (d) is incorrect; the OS is best heard between the apex and the left sternal border, not typically at the second left intercostal space (pulmonic area).

6. (b) Atrio-ventricular nodal reentrant tachycardia - Termination

Intravenous adenosine is a very short-acting drug that primarily works by blocking conduction through the atrioventricular (AV) node. Its main diagnostic and therapeutic use is for supraventricular tachycardias (SVTs) that depend on the AV node for their continuation. Atrio-ventricular nodal reentrant tachycardia (AVNRT) is the most common type of paroxysmal SVT, and its re-entrant circuit involves the AV node. Adenosine breaks this circuit, resulting in abrupt termination of the tachycardia and a return to sinus rhythm. Option (a) is incorrect; in atrial fibrillation, adenosine will only temporarily slow the ventricular rate by blocking AV conduction but will not terminate the fibrillation itself. Option (d) is similar; in atrial flutter, adenosine will block the AV node, unmasking the underlying "sawtooth" flutter waves on the ECG, but it will not terminate the flutter. Option (c) is incorrect; most forms of ventricular tachycardia (VT) originate below the AV node and are not affected by adenosine. Using adenosine for VT can be dangerous (though some rare, idiopathic VTs may respond). Therefore, the only arrhythmia listed that is reliably terminated by adenosine is AVNRT.

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7. (c) II, III, I, V, IV

The correct sequence for using a metered-dose inhaler (MDI) is critical for ensuring optimal drug delivery to the lungs. The process begins with preparation: (II) Remove the cap and shake the inhaler to ensure the medication and propellant are properly mixed. Next, the patient prepares their lungs: (III) Breathe out gently and place the mouthpiece into the mouth. This step empties the lungs to allow for a deep inspiration. Then, the patient positions their head: (I) Incline the head backward to minimize oropharyngeal deposition, which helps straighten the airway. The most coordinated step is next: (V) Simultaneously, begin a slow deep inspiration, depress the canister and continue to inhale. This coordination is key to drawing the aerosolized medication deep into the lungs. Finally, to allow the medication to settle on the airway surfaces, the patient must: (IV) Hold the breath for 10 seconds (or as long as comfortably possible). The sequence II, III, I, V, IV correctly orders these actions for effective MDI use. The other options present an incorrect and less effective order of operations.

8. (a) Low dose inhaled corticosteroid only

Recent global guidelines for asthma management, such as those from GINA (Global Initiative for Asthma), have shifted away from using short-acting beta-agonists (SABA) alone, even for mild, intermittent asthma (Step 1). This change is due to evidence that SABA-only treatment does not address the underlying airway inflammation and can be associated with

adverse outcomes. The current recommendation for Step 1 (patients with infrequent symptoms, i.e., less than twice a month) is to use an as-needed low-dose inhaled corticosteroid (ICS)-formoterol combination. However, if that is not available, the alternative is to take a low-dose inhaled corticosteroid whenever a SABA is taken. Among the choices provided, "Low dose inhaled corticosteroid only" is the most appropriate foundational therapy. Options (b), (c), and (d) all represent "add-on" therapies that are reserved for Step 2 or higher, once symptoms are more persistent and not controlled by low-dose ICS alone. Oral corticosteroids (b) are reserved for severe exacerbations or Step 5.

Note: The question's options are slightly simplified. Modern guidelines emphasize as-needed ICS or ICS-LABA for Step 1. Given the choices, (a) is the best fit as the base controller medication.

**9.** (b) Stage II - Moderate

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria are used to diagnose and stage COPD. The first step is establishing the diagnosis, which requires a post-bronchodilator FEV1/FVC ratio of $< 0.70$ (or $< 70\%$). This patient's ratio is 0.6, which confirms the diagnosis of airflow obstruction. The second step is to grade the severity of the obstruction based on the post-bronchodilator FEV1 % predicted.

The GOLD stages for severity are:

1. GOLD 1 (Mild): FEV1 $\geq 80\%$ predicted
2. GOLD 2 (Moderate): $50\% \leq$ FEV1 $< 80\%$ predicted
3. GOLD 3 (Severe): $30\% \leq$ FEV1 $< 50\%$ predicted
4. GOLD 4 (Very Severe): FEV1 $< 30\%$ predicted

This patient's FEV1 is 70% of predicted. This value falls into the range of 50% to < 80%. Therefore, according to the GOLD criteria, the patient has Stage II - Moderate airflow obstruction. Option (a) is incorrect because FEV1 is < 80%. Options (c) and (d) are incorrect because the FEV1 is much higher than the thresholds for severe or very severe disease.

**10.** (b) Autosomal Recessive

Cystic fibrosis (CF) is one of the most common life-limiting genetic disorders, particularly in populations of Northern European descent. It follows an autosomal recessive pattern of inheritance. This means that for an individual to be affected by the disease, they must inherit two copies of the mutated gene, one from each parent. The gene responsible for CF is the CFTR (Cystic Fibrosis Transmembrane conductance Regulator) gene, located on chromosome . Individuals who inherit only one copy of the mutated CFTR gene are "carriers." They are typically asymptomatic but can pass the mutated gene to their offspring. If two carriers have a child, there is a 25% chance the child will have CF (inheriting both mutant copies), a 50% chance the child will be a carrier (inheriting one mutant copy), and a 25% chance the child will be unaffected (inheriting two normal copies). Options (a), (c), and (d) are incorrect as they describe different modes of inheritance that do not apply to CF.

**11.** (b) I, II and IV

Noninvasive positive-pressure ventilation (NIPPV) is a valuable tool for respiratory failure, but its success depends on a cooperative patient with a patent airway and the ability to form a good mask seal. Craniofacial abnormalities (I) or trauma can make it impossible to achieve an effective seal, rendering NIPPV ineffective and leaking. Significant burns (II), especially to the face, also preclude the application of a tight-fitting mask and are a clear contraindication. Cardiovascular instability (IV), such as shock or uncontrolled arrhythmias, is another contraindication. NIPPV increases intrathoracic pressure, which can reduce venous return (preload) and worsen hypotension. Such unstable patients require the definitive airway control and hemodynamic management provided by invasive mechanical ventilation. In contrast, respiratory failure with a $PaCO_2$ of 60 mm Hg (III) (hypercapnic respiratory failure) is a primary indication for NIPPV, particularly in the context of a COPD exacerbation. NIPPV helps unload the respiratory muscles and improve ventilation, leading to a reduction in $PaCO_2$. Therefore, the contraindications listed are I, II, and IV.

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**12.** (b) Hidebound Chest

Systemic sclerosis (scleroderma) is an autoimmune connective tissue disease characterized by widespread fibrosis of the skin and internal organs. In rare cases, the skin and subcutaneous tissues of the chest wall can become so thickened, hardened, and fibrosed (sclerotic) that they severely restrict the normal expansion of the thorax during breathing. This condition is descriptively termed "Hidebound Chest". The skin becomes bound down to the underlying structures, much like a rigid hide, leading to a restrictive ventilatory defect and respiratory failure. Option (a), Flail Chest, is an acute, traumatic condition caused by multiple rib fractures, leading to paradoxical movement of a chest wall segment. Option (c), Barrel Chest, describes an increased anteroposterior diameter of the chest, classically seen in patients with emphysema due to chronic air trapping. Option (d), Pigeon Chest (pectus carinatum), is a congenital or acquired deformity where the sternum protrudes outward.

**13.** (b) Myxedema

To determine the cause of the pleural effusion, we first apply Light's criteria to classify it as transudative or exudative.

1. Pleural fluid protein / Serum protein > 0.5? $0.5/6.5 = 0.077$ (which is 5$)
2. Pleural fluid LDH / Serum LDH > 0.6? $100/300 = 0.33$ (which is $\leq 0.6$)
3. Pleural fluid LDH > 2/3 upper limit of normal serum LDH?

Assuming the upper limit is $\sim 200 - 250$ U/L, 100 U/L is not greater than 2/3 of this.

Since none of the criteria are met, this is a transudative effusion. Transudates are caused by systemic factors altering hydrostatic or oncotic pressure (e.g., heart failure, cirrhosis, nephrotic syndrome, myxedema) rather than local inflammation.

Pancreatitis (a), Sarcoidosis (c), and Rheumatoid arthritis (d) all typically cause exudative effusions due to inflammation. Myxedema (b), or severe hypothyroidism, is a well-known, though uncommon, cause of transudative pleural effusions (and other serous effusions like pericardial). The high pH (7.6) is also unusual and can be seen in some transudates, whereas inflammatory effusions (like rheumatoid) often have a very low pH. Given the clear transudative profile, myxedema is the most likely diagnosis among the choices.

**14.** (b) Cryptogenic Organizing Pneumonia

Masson bodies are the classic, though not entirely specific, histopathological hallmark of Cryptogenic Organizing Pneumonia (COP), formerly known as Bronchiolitis Obliterans Organizing Pneumonia (BOOP). These bodies are not true granulomas but are distinctive polypoid plugs of immature, loose-staining collagen and fibroblasts (myofibroblasts) mixed with inflammatory cells. They are found within the lumina of the alveoli, alveolar ducts, and respiratory bronchioles, representing an organized inflammatory response to lung injury. While Masson bodies are characteristic of COP, they can also be seen in other conditions, such as hypersensitivity pneumonitis, drug reactions, and connective tissue diseases. Among the choices, however, they are the defining feature of COP. Lymphocytic Interstitial Pneumonia (LIP) is characterized by a diffuse infiltrate of lymphocytes. Desquamative Interstitial Pneumonia (DIP) features alveoli filled with numerous macrophages. Respiratory Bronchiolitis (RB-ILD) involves macrophage accumulation within respiratory bronchioles and is strongly associated with smoking.

**15.** (d) I, III and IV

The aging process causes several predictable changes in the respiratory system. Statement I is correct; due to changes in elasticity and closing capacity of small airways, there is an increasing ventilation-perfusion (V/Q) mismatch, which contributes to a lower resting $PaO_2$. Statement III is correct; a general decline in maximum oxygen uptake ($VO_2$ max) occurs with age due to combined changes in pulmonary, cardiovascular, and muscular function, leading to a reduced cardiorespiratory reserve. Statement IV is correct; lung elasticity decreases with age, leading to a faster decline in FEV1 compared to FVC. This results in a progressive decline in the FEV1/FVC ratio (though the rate cited, 0.2% per year, is modest; other estimates are higher).

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Statement II is incorrect; a key feature of aging is a blunted or decreased ventilatory response to both hypoxia and hypercapnia. This reduced chemosensitivity makes elderly individuals more vulnerable to respiratory failure. Therefore, the correct statements are I, III, and IV.

**16.** (a) Rheumatoid pulmonary nodules are usually asymptomatic and detected incidentally on imaging

Rheumatoid arthritis (RA) can affect multiple parts of the respiratory system, including the pleura, lung parenchyma, and airways. Rheumatoid pulmonary nodules are a specific manifestation. Statement (a) is correct: these nodules are typically asymptomatic and discovered incidentally on chest imaging. They can be solitary or multiple. Statement (b) is incorrect; while they can be solitary, they are more often multiple and are characteristically found in the periphery of the lungs, often subpleurally, not near the hilum. Statement (c) is incorrect; pleural effusion in RA is a classic example of an exudative effusion, not transudative. It is characterized by very low glucose levels, low pH, and high LDH. It is also typically unilateral, not bilateral. Statement (d) is incorrect; Caplan syndrome is defined as the combination of rheumatoid pulmonary nodules (not pleural effusion) and pneumoconiosis (like coal worker's pneumoconiosis) in a patient with RA.

**17.** (c) Lemierre syndrome

Lemierre syndrome is the correct answer. It is a rare but life-threatening complication that typically begins as a bacterial pharyngitis or tonsillitis, most commonly caused by the anaerobic bacterium Fusobacterium necrophorum. The infection spreads from the pharynx into the lateral pharyngeal space and causes septic thrombophlebitis (thrombosis with infection) of the internal jugular vein. From this site, septic emboli can break off and travel (metastatic dispersal) to distant sites, most commonly the lungs, causing septic pulmonary infarcts, abscesses, and empyema. It often presents in otherwise healthy adolescents and young adults. Cystic Fibrosis is a genetic disease affecting chloride transport. Chronic Pulmonary Aspergillosis is a fungal lung infection. Wegener's granulomatosis (now Granulomatosis with Polyangiitis) is a systemic autoimmune vasculitis. None of these other options match the specific pathophysiology described in the question.

NODIA

**18.** (d) Spironolactone

The patient's history of alcohol dependency combined with progressive abdominal distension and shifting dullness is classic for ascites, most likely secondary to alcoholic cirrhosis and portal hypertension. The primary medical management for ascites involves sodium restriction and diuretics. Spironolactone, an aldosterone antagonist, is the first-line and most appropriate drug for this purpose. Cirrhosis leads to secondary hyperaldosteronism, which promotes sodium and water retention. Spironolactone directly counteracts this mechanism, promoting diuresis and relief of ascites. It is often used in combination with a loop diuretic like furosemide. Propranolol is a beta-blocker used in cirrhosis to prevent variceal bleeding, not to treat ascites. Lactulose is used to treat hepatic encephalopathy. Octreotide is a somatostatin analog used primarily for acute variceal bleeding. Therefore, to relieve the ascites (abdominal distension), spironolactone is the correct initial drug.

**19.** (a) Transabdominal ultrasound

The investigation of choice for diagnosing gallstones (cholelithiasis) is transabdominal ultrasound. It is a highly sensitive (>95%) and specific, non-invasive, widely available, and relatively inexpensive test. On ultrasound, gallstones typically appear as echogenic (bright) foci within the gallbladder lumen, which cast a distinct acoustic shadow (a dark streak) behind them. They are also usually mobile, changing position when the patient moves. Option (b), Erect X-ray of the abdomen, is not a good choice because only 10-15% of gallstones are calcified and radiopaque; the majority are cholesterol stones and are radiolucent (invisible) on X-ray. Option (d), Computed Tomography (CT), can detect gallstones (especially calcified ones) but is less sensitive than ultrasound for most stones and involves ionizing radiation and higher cost.

It is not the primary diagnostic tool for this purpose. Option (c), Capsule endoscopy, is used to visualize the small intestine and has no role in diagnosing gallbladder disease.

**20.** (d) Tofacitinib

The drugs used for Inflammatory Bowel Disease (IBD) target different parts of the inflammatory cascade. Tofacitinib is the correct answer. It is not a biologic agent (which are large-molecule proteins) but rather a small-molecule drug. It works by inhibiting the Janus Kinase (JAK) enzymes (specifically JAK1, JAK2, and JAK3). JAK enzymes are intracellular signaling molecules that are crucial for the function of numerous pro-inflammatory cytokines. By blocking them, tofacitinib reduces the inflammatory response. Infliximab and Adalimumab are biologic agents, but they are monoclonal antibodies that work by blocking Tumor Necrosis Factor-alpha (TNF-$\alpha$), a key pro-inflammatory cytokine. Vedolizumab is also a biologic (monoclonal antibody) that works differently; it is an integrin antagonist ($\alpha4\beta7$) that prevents lymphocytes from migrating from the bloodstream into the gut tissue (gut-specific anti-inflammatory action).

**21.** (c) Lipofuscin

Melanosis coli is a benign condition characterized by a dark brown to black pigmentation of the colonic mucosa. It is most commonly associated with the chronic use of anthraquinone-based stimulant laxatives (e.g., senna, cascara). The "melanosis" part of the name is actually a misnomer, as the pigment involved is not melanin. Instead, the laxatives induce apoptosis (programmed cell death) in the colonic epithelial cells. These apoptotic bodies are then engulfed by macrophages within the lamina propria. The pigment observed is lipofuscin, a "wear-and-tear" pigment derived from the peroxidation of lipids, which accumulates within these macrophages. This gives the mucosa its characteristic dark-stippled or "leopard-spotting" appearance on colonoscopy. Haemosiderin is an iron-storage pigment, and haemoglobin is the oxygen-carrying protein in red blood cells; neither is responsible for melanosis coli.

**22.** (c) I, II and III

Gilbert Syndrome is a common and benign hereditary condition of bilirubin metabolism. Statement I is correct: It is typically inherited as an autosomal recessive trait (though sometimes described as autosomal dominant with reduced penetrance). The genetic basis is a mutation, most commonly a (TA) dinucleotide repeat in the promoter region of the UGT1A1 gene, which codes for the enzyme UDP-glucuronyl transferase. This mutation reduces the enzyme's activity. Statement II is correct: This reduced enzyme activity impairs the liver's ability to conjugate bilirubin (make it water-soluble). This leads to a mild, fluctuating elevation of unconjugated (indirect) bilirubin in the blood, typically < 3-4 mg/dL. Statement III is correct: Gilbert Syndrome is a benign condition. Affected individuals are otherwise healthy and have normal liver function tests. They show no other stigmata of chronic liver disease (like ascites, splenomegaly, or coagulopathy), with jaundice being the only finding, often noticed during periods of stress, fasting, or illness. Statement IV is incorrect: A liver biopsy is not recommended or necessary for diagnosing Gilbert Syndrome. The diagnosis is usually made clinically based on isolated unconjugated hyperbilirubinemia with normal liver enzymes and no evidence of hemolysis. Therefore, statements I, II, and III are correct.

**23.** (b) Cessation of alcohol consumption

The cornerstone of management and the most critical determinant of long-term outcome in patients with alcohol-related liver disease (ARLD) is complete and permanent cessation of alcohol consumption. Continued alcohol use accelerates the progression of liver disease, from steatosis to alcoholic hepatitis, fibrosis, and ultimately cirrhosis, leading to complications like portal hypertension, ascites, variceal bleeding, and hepatocellular carcinoma. Abstinence is the only intervention that can halt or, in early stages, even reverse the liver damage. Prognosis at any stage of ARLD is significantly better for patients who stop drinking compared to those who continue. While liver transplantation (c) is a treatment for end-stage liver disease, it is

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an option only for those who have achieved a significant period of abstinence. N-acetyl cysteine (a) is the antidote for paracetamol (acetaminophen) overdose, not ARLD. High-dose vitamin E (d) has been studied in non-alcoholic steatohepatitis (NASH), but its role in ARLD is not established as a primary treatment.

NODIA

**24.** (d) Erythema ab igne

The diagnosis is Erythema ab igne, which literally means "redness from fire." This is a specific skin condition characterized by a reticulated (net-like), hyperpigmented, and sometimes erythematous rash. It is caused by chronic and repeated exposure to moderate heat or infrared radiation, which is insufficient to cause a burn but enough to induce changes in the skin over time. The patient's history of chronic use of a hot water bottle on his abdomen to relieve pain from chronic pancreatitis is the classic etiology. The heat exposure damages superficial blood vessels and leads to the deposition of hemosiderin and melanin, creating the characteristic fishnet-like pigmentation. Erythema infectiosum (a) (Fifth disease) is a viral illness (Parvovirus B19) causing a "slapped cheek" rash. Erythema marginatum (b) is a fleeting, ring-shaped rash associated with acute rheumatic fever. Erythema nodosum (c) presents as tender, red nodules, usually on the shins, and is a septal panniculitis.

**25.** (d) It is an oral drug

Tolvaptan is a "vaptan" class drug, which acts as an antagonist to the arginine vasopressin (AVP) receptors. Its key correct characteristic is that it is an oral drug, making it suitable for outpatient or continued inpatient management of hyponatremia. It is a selective antagonist, meaning it specifically blocks the V2 receptor in the renal collecting ducts, not the V1 receptor (which is involved in vasopressor-desmopressin). By blocking the V2 receptor, it prevents AVP (also known as antidiuretic hormone) from inserting aquaporin-2 water channels, thus promoting free water excretion (aquaresis) and raising serum sodium levels. Option (a) is incorrect; tolvaptan is indicated for euvolemic (like SIADH) and hypervolemic (like heart failure or cirrhosis) hyponatremia. It is contraindicated in hypovolemic hyponatremia, where the primary treatment is fluid resuscitation with isotonic saline. Option (c) is also incorrect; its use is typically for a short duration (e.g., < 30 days) due to concerns about hepatotoxicity with long-term use.

**26.** (b) Bartter syndrome

Bartter syndrome is the correct answer. It is a group of autosomal recessive renal tubulopathies characterized by salt wasting, hypokalemic metabolic alkalosis, and hypercalciuria (with a risk of kidney stones). The most common form (antenatal or classic Bartter) is caused by inactivating mutations in the gene for the sodium-potassium-2-chloride cotransporter (NKCC2), which is located in the thick ascending limb (TAL) of the loop of Henle. This transporter is responsible for reabsorbing a significant portion of filtered salt. Its dysfunction mimics the effect of a loop diuretic (like furosemide), leading to sodium wasting, hypokalaemia (due to increased distal delivery of sodium), and hypercalciuria (as the positive lumen potential that drives paracellular calcium reabsorption is lost). Gitelman syndrome (d) is similar but affects the distal convoluted tubule (mimicking a thiazide diuretic) and characteristically causes hypocalciuria. Fanconi syndrome (c) is a generalized proximal tubule dysfunction. Alport syndrome (a) is a hereditary nephritis affecting collagen IV.

**27.** (d) Urine albumin

The earliest clinical sign of diabetic nephropathy is the development of microalbuminuria, which is the persistent excretion of small amounts of albumin in the urine (typically defined as 30-300 mg/day). Therefore, screening for urine albumin (usually via a urine albumin-to-creatinine ratio, or UACR, on a spot sample) is the standard and most sensitive test for the early detection of nephropathy in patients with diabetes. This stage often occurs long before any significant change in glomerular filtration rate (GFR). Serum creatinine (b) and blood urea (a) levels are markers of GFR. They typically do not become elevated until a significant portion of kidney function (often > 50%) has already been lost. Relying on them would mean missing the

early window for intervention. Ultrasonography (c) is useful for evaluating kidney size (which may be large in early diabetic nephropathy) and ruling out other structural causes of kidney disease, but it is not a primary screening tool for early functional damage like microalbuminuria.

**28.** (a) WT1

The gene described is WT1 (Wilms Tumor 1). Mutations in the WT1 gene, located on chromosome 11, are responsible for several syndromes that connect kidney disease with urogenital abnormalities and a predisposition to Wilms' tumor. Denys-Drash syndrome, for example, is caused by dominant WT1 mutations and presents with congenital nephropathy (often diffuse mesangial sclerosis or focal segmental glomerulosclerosis, FSGS), abnormal genitalia (pseudohermaphroditism or ambiguous genitalia in XY individuals), and a very high risk of Wilms' tumor. Frasier syndrome is another WT1 mutation syndrome causing FSGS and gonadal dysgenesis. WAGR syndrome (Wilms' tumor, Aniridia, Genitourinary anomalies, and Mental Retardation ) is caused by a deletion that includes the WT1 gene. INF2 (b) and APOL1 (d) are other genes associated with hereditary FSGS, but not this specific syndrome. LMX1B (c) mutations cause Nail-Patella Syndrome.

**29.** (c) Stage 4 (severe)

The stages of Chronic Kidney Disease (CKD) are classified by the Kidney Disease: Improving Global Outcomes (KDIGO) guidelines based on the Glomerular Filtration Rate (GFR). The stages are as follows:

1. Stage 1: GFR $\geq$ 90 $\mathrm{mL/min/1.73\ m^2}$ (with evidence of kidney damage)
2. Stage 2 (Mild): GFR 60-89 $\mathrm{mL/min/1.73\ m^2}$ (with evidence of kidney damage)
3. Stage 3a (Mild to moderate): GFR 45-59 $\mathrm{mL/min/1.73\ m^2}$
4. Stage 3b (Moderate to severe): GFR 30-44 $\mathrm{mL/min/1.73\ m^2}$
5. Stage 4 (Severe): GFR 15-29 $\mathrm{mL/min/1.73\ m^2}$
6. Stage 5 (Kidney failure): GFR < 15 $\mathrm{mL/min/1.73\ m^2}$ or on dialysis

The GFR value given in the question is $15-29\ \mathrm{mL/min/1.73\ m^2}$. This range corresponds directly to Stage 4 (severe) CKD. This stage signifies a severe reduction in GFR and is typically when patients are prepared for renal replacement therapy (dialysis or transplantation).

**30.** (c) Nephronophthisis

Hereditary tubulointerstitial kidney diseases (TKDs) are a group of disorders that primarily affect the renal tubules and interstitium, leading to progressive chronic kidney disease. The inheritance patterns are key to classifying them. Nephronophthisis (NPHP) is the classic example of an autosomal recessive TKD. It is the most common genetic cause of end-stage renal disease in children and young adults and is caused by mutations in NPHP genes, which code for ciliary proteins. In contrast, Medullary cystic kidney disease (MCKD) type 1 (caused by MUC1 mutations) and MCKD type 2 (caused by UMOD mutations, encoding uromodulin) are both autosomal dominant. Juvenile hyperuricemic nephropathy (also part of the UMOD-related kidney disease spectrum) is also inherited in an autosomal dominant manner. Therefore, nephronophthisis is the correct autosomal recessive condition among the choices.

**31.** (d) I, II and IV

Acute nephritis, or the acute nephritic syndrome, is a clinical syndrome defined by the abrupt onset of glomerular inflammation. The classic findings are a direct result of this inflammation and damage to the glomerular filtration barrier. Hematuria (I) is a hallmark, often presenting as macroscopic (visibly red or "cola-colored") urine, and is caused by red blood cells leaking through the damaged glomeruli. Oliguria (II) (reduced urine output) occurs because the inflammation severely reduces the glomerular filtration rate (GFR). Edema (IV) (swelling), particularly periorbital and in the lower extremities, is also a key feature. It results from the reduced GFR leading to salt and water retention by the kidneys. Reduced size of both kidneys (III) is a finding characteristic of chronic kidney disease, where progressive fibrosis and scarring lead to atrophy. In acute nephritis, the kidneys are typically normal-sized or may even be slightly enlarged due to inflammation

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and edema. Therefore, the findings suggestive of acute nephritis are hematuria, oliguria, and edema (I, II, and IV).

**32.** (a) I, III and IV

The patient presents with polyuria (urine output > 3L/day; here it is 4L/day) and a dilute urine (urine osmolality < 300 mosmol/L; here it is 200 mosmol/L). This clinical picture indicates a state of water diuresis, where the kidneys are excreting an excess of free water. This can be caused by three main conditions:

1. Central diabetes insipidus (III): A deficiency of antidiuretic hormone (ADH) from the pituitary.
2. Nephrogenic diabetes insipidus (IV): The kidneys are resistant to the effects of ADH.
3. Psychogenic polydipsia (I) (or primary polydipsia): Excessive water intake suppresses ADH release, leading to a compensatory water diuresis.

All three of these conditions result in polyuria with dilute urine. Solute diuresis (II), such as the osmotic diuresis seen in uncontrolled diabetes mellitus (due to glucose) or after high-protein feeding (due to urea), would also cause polyuria, but the urine would be is-osmotic or hyper-osmotic (urine osmolality > 300 mosmol/L), not dilute. Since the patient's urine osmolality is low (200 mosmol/L), solute diuresis is unlikely, and the differential diagnosis includes primary polydipsia, central DI, and nephrogenic DI (I, III, and IV).

**33.** (b) Temporal lobe

The visual pathway from the lateral geniculate nucleus (LGN) fans out as optic radiations to reach the primary visual cortex in the occipital lobe. These radiations are split. The fibers carrying information from the inferior retina (which sees the superior visual field) travel through the temporal lobe in a path known as Meyer's loop. The fibers carrying information from the superior retina (which sees the inferior visual field) travel more directly back through the parietal lobe. A lesion in the temporal lobe that interrupts Meyer's loop will therefore cause a loss of the superior visual field on the opposite side. Since the pathways are post-chiasmatic, the defect will be homonymous (affecting the same side of the visual field in both eyes). Thus, a temporal lobe lesion causes a contralateral homonymous upper quadrantanopia (a "pie in the sky" defect). Conversely, a parietal lobe lesion causes a contralateral homonymous inferior quadrantanopia ("pie on the floor"). A lesion in the occipital lobe would cause a contralateral homonymous hemianopia, often with macular sparing.

NODIA

**34.** (a) I, II and III

All three statements are correct descriptions of migraine features. Statement I is correct: The pulsating or throbbing quality of migraine headache is thought to be related to neurogenic inflammation and the dilatation of extracranial (and intracranial) blood vessels, which activates perivascular trigeminal sensory nerves. This is the basis for why vasoconstrictive drugs like triptans are effective. Statement II is correct: Migraines are broadly classified into two main types: migraine without aura and migraine with aura. Migraine without aura is the more prevalent form, historically and commonly referred to as "common migraine." Migraine with aura (classic migraine) is less common. Statement III is correct: An aura is a transient focal neurological symptom that precedes or accompanies the headache. The most common type of aura is visual, often described as flashing lights (photopsia), zigzag lines (scintillating scotoma), or areas of visual loss. Sensory (tingling, numbness) and language (aphasia) auras can also occur but are less frequent. Since all three statements are clinically accurate, option (a) is the correct answer.

**35.** (d) Trigeminal neuralgia

The clinical presentation is classic for Trigeminal neuralgia (also known as tic douloureux). This condition is characterized by brief, paroxysmal (sudden) episodes of severe, stabbing, or lancinating pain that is unilateral and confined to the distribution of one or more branches of the trigeminal nerve (CN V). The patient's pain in the "buccal distribution" corresponds to the maxillary (V2) or mandibular (V3) branches. A hallmark feature is the presence of "trigger zones" or specific actions that provoke an attack. The patient's pain being triggered by

washing the face with cold water is a perfect example. Other common triggers include touching the face, chewing, talking, or a draft of wind. Migraine (a) is a longer-lasting, throbbing headache. Medication overuse headache (b) is a chronic, diffuse headache from analgesic overuse. Chronic paroxysmal hemicrania (c) is a trigeminal autonomic cephalalgia with shorter attacks (2-30 min) but with prominent autonomic features (tearing, nasal congestion) and is not typically triggered this way.

**36.** (d) I, II, III and IV

All four factors listed are well-recognized precipitants that can lower the seizure threshold and trigger a breakthrough seizure in a person with epilepsy, or even a first-time seizure in a susceptible individual. (I) Sleep deprivation is one of the most potent and common seizure triggers. (II) Missed doses of antiepileptic drugs (AEDs) is the most common cause of breakthrough seizures in patients with known epilepsy; maintaining stable AED levels is critical for seizure control. (III) Recreational drug misuse, particularly with stimulant drugs (like cocaine or amphetamines) or alcohol (especially during withdrawal), can significantly lower the seizure threshold. (IV) Physical exhaustion, along with other forms of physical or emotional stress, can also act as a trigger. Other common triggers include fever/illness, flashing lights (photosensitivity), and hormonal changes (catamenial epilepsy). Since all four are established trigger factors, option (d) is the correct answer.

**37.** (d) Juvenile myoclonic epilepsy

The prognosis and treatment duration for childhood epilepsy syndromes vary greatly. Juvenile Myoclonic Epilepsy (JME) is the correct answer. JME is a common generalized epilepsy syndrome with onset in adolescence, characterized by myoclonic jerks (often in the morning), generalized tonic-clonic seizures, and sometimes absence seizures. While the seizures are typically well-controlled with medication (like valproic acid), JME is considered a lifelong condition for most patients. Discontinuation of antiepileptic drugs (AEDs) is associated with a very high relapse rate (up to 90%), so long-term or lifelong treatment is the standard of care. In contrast, the other options are typically self-limiting. Benign neonatal seizures (a) ("fifth-day fits") resolve spontaneously. Febrile seizures (b) are age-dependent (6 months to 5 years) and usually do not require long-term AEDs. Benign rolandic epilepsy (c) (also called Benign Epilepsy with Centrotemporal Spikes) is the most common childhood epilepsy and has an excellent prognosis, with seizures and EEG abnormalities typically resolving by puberty.

**38.** (a) I, II and III

Parkinson's disease (PD) is a neurodegenerative disorder characterized by the cardinal motor features of bradykinesia, rigidity, resting tremor, and postural instability. It also has many non-motor and secondary motor features. (I) Reduced eye blinking (hypomimia or "masked facies") is a classic sign of the bradykinesia affecting facial muscles. (II) Drooling of saliva (sialorrhea) is common, not due to overproduction of saliva, but due to impaired and infrequent swallowing (a form of bradykinesia). (III) Soft voice (hypophonia) is also a characteristic feature, where the speech becomes quiet, rapid, and monotone (dysarthria). (IV) Macrographia means abnormally large handwriting. This is incorrect. A classic feature of PD is micrographia, where the handwriting becomes progressively smaller and more cramped as the person writes. This is another manifestation of bradykinesia. Therefore, the correct clinical features listed are I, II, and III.

**39.** (d) Intravascular hemolysis

The key to this question is interpreting the lab values. The patient has severe anemia (Hb 6 g%). The anemia is normocytic normochromic , which rules out typical iron deficiency (a) and folate deficiency (c) (which are microcytic and macrocytic, respectively). Sideroblastic anemia (b) is often microcytic or dimorphic. The most important clue is the reticulocyte production index (RPI) of 5.5. A normal RPI is ~1. An RPI > 2-3 indicates a robust, hyperproliferative bone marrow response to the anemia. This means the bone marrow is healthy and is trying to compensate by producing many new red blood cells (reticulocytosis). This pattern is the

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hallmark of two conditions: acute blood loss or hemolysis (destruction of red blood cells). Given the options, intravascular hemolysis (d) is the only condition that fits. The rapid destruction of RBCs triggers a strong compensatory reticulocytosis, resulting in a normocytic anemia (as the new cells are normal-sized) and a very high RPI.

**40.** (d) Vitamin B12 levels

This patient's clinical presentation is highly suggestive of subacute combined degeneration of the spinal cord (SCD). The symptoms of tingling and numbness in the lower limbs indicate peripheral neuropathy (affecting sensory nerves), and swaying while walking through narrow corridors (a positive Romberg's sign) indicates a loss of proprioception, which is a posterior column sign. This specific combination of peripheral neuropathy and posterior column dysfunction is classic for Vitamin B12 deficiency. The patient's history provides the cause: she has been on a strict vegan diet for a decade. Vitamin B12 is found almost exclusively in animal products (meat, dairy, eggs). A long-term vegan diet without supplementation will inevitably lead to B12 deficiency. Therefore, measuring Vitamin B12 levels is the most appropriate blood test. While Vitamin D deficiency (c) can also occur in vegans, it does not cause SCD. Celiac disease (b) can cause malabsorption and neuropathy, but the dietary history points more directly to B12.

**41.** (c) Gaisbock's syndrome

Erythrocytosis (or polycythemia) is an increase in the red blood cell mass. It can be "absolute" (a true increase in red cell production) or "relative" (a decrease in plasma volume, making the blood seem more concentrated). "Low-volume erythrocytosis" is another term for relative or apparent erythrocytosis. Gaisbock's syndrome is the classic example of this. It is not a true polycythemia but a condition seen in (often obese, hypertensive, diuretic-using) middle-aged men where a chronically low plasma volume leads to a high hematocrit. The total red cell mass is normal. In contrast, Polycythemia Rubra Vera (a) is a myeloproliferative neoplasm causing a massive increase in red cell mass (absolute polycythemia). High altitude (d) and exogenous testosterone therapy (b) are both causes of secondary absolute polycythemia, where erythropoietin (EPO) production is stimulated (by hypoxia or androgens, respectively), leading to a true increase in red cell production.

**42.** (c) Imatinib

The treatment of Chronic Myeloid Leukemia (CML) was revolutionized by the development of targeted therapies. CML is characterized by the presence of the Philadelphia chromosome, which results from a translocation (t(9;22)) creating the BCR-ABL fusion gene. This gene produces an abnormal, constitutively active tyrosine kinase that drives the excessive proliferation of myeloid cells. Imatinib (Gleevec) was the first and is the prototypical tyrosine kinase inhibitor (TKI). It specifically binds to and inhibits the BCR-ABL kinase, shutting down the malignant cell growth. Imatinib and other TKIs (like nilotinib, dasatinib) are the standard first-line therapy for chronic phase CML. Rituximab (a) is a monoclonal antibody targeting CD20, used for lymphomas and autoimmune diseases. Thalidomide (b) is an immunomodulatory drug used for multiple myeloma. Chlorambucil (d) is an alkylating agent (chemotherapy) used for chronic lymphocytic leukemia (CLL) and some lymphomas.

NODIA

**43.** (b) II, III and IV

Let's evaluate each statement regarding Idiopathic (Immune) Thrombocytopenic Purpura (ITP):

1. Statement I is incorrect. Treatment for ITP is generally not initiated based on a platelet count alone (unless < 20-30k/L). Treatment is reserved for patients who are actively bleeding or are at high risk of bleeding. Many asymptomatic patients with counts between 30-100k/L are managed with observation.
2. Statement II is correct. For adult ITP patients requiring first-line treatment, especially those with bleeding, a high-dose corticosteroid regimen is standard. One common and effective regimen is high-dose dexamethasone (e.g., 40 mg daily) for 4 days.

3. Statement III is correct. Intravenous immunoglobulin (IVIg) is a first-line therapy, along with steroids, especially when a rapid increase in platelet count is needed (e.g., severe bleeding). It works by overwhelming the reticuloendothelial system, preventing the clearance of antibody-coated platelets.
4. Statement IV is correct. In cases of life-threatening bleeding (e.g., intracranial hemorrhage), platelet transfusion is an essential emergency measure. Although the transfused platelets will also be destroyed by the autoantibodies, they provide temporary hemostasis and should be given along with IVIg and steroids.

Therefore, the correct statements are II, III, and IV.

**44.** (d) I and II only

Several medications are known to have weight gain as a common side effect.

I. Insulin is a well-known cause of weight gain. It is an anabolic hormone that promotes glucose uptake and storage, inhibits fat breakdown (lipolysis), and promotes fat synthesis (lipogenesis).
II. Propranolol, a non-selective beta-blocker, is also associated with weight gain. The mechanisms are thought to include a reduction in metabolic rate and promotion of a switch to glucose metabolism over fat oxidation.
III. Orlistat is a weight loss medication. It works by inhibiting pancreatic and gastric lipases, thereby reducing the absorption of dietary fat from the intestine.
IV. Thyroxine (levothyroxine) is a thyroid hormone replacement. In a hypothyroid patient, initiating thyroxine typically leads to weight loss (or normalization) as it restores the basal metabolic rate. Weight gain is characteristic of hypothyroidism, not thyroxine therapy.

Therefore, the drugs listed that can cause secondary weight gain are Insulin (I) and Propranolol (II).

**45.** (c) If glucocorticoids have been prescribed repeatedly within the previous year

NODIA

Suppression of the hypothalamic-pituitary-adrenal (HPA) axis is a major complication of exogenous glucocorticoid therapy. The risk depends on the dose, duration, and frequency of administration. A suppressed HPA axis can lead to an acute adrenal crisis if the steroids are withdrawn abruptly.

Statement (c) is correct because repeated courses of steroids, even if individually short, can have a cumulative suppressive effect on the HPA axis. The axis may not fully recover between courses, making the patient vulnerable to adrenal insufficiency.

Statements (a) and (b) are incorrect. Short courses of glucocorticoids, defined as less than 2-3 weeks (e.g., five days IV or one week orally ), regardless of the dose, are generally considered safe to stop without tapering as they are unlikely to cause clinically significant HPA axis suppression.

Statement (d) is incorrect. A dose less than 5 mg of prednisolone (or equivalent) per day is generally considered a physiologic replacement dose and is unlikely to suppress the HPA axis, even when given long-term. HPA axis suppression is a concern with supra-physiologic doses (e.g., > 7.5 mg/day of prednisolone) given for more than 3 weeks.

**46.** (c) Autosomal recessive

Wilson's disease is a genetic disorder of copper metabolism, not an acquired disease. It follows an autosomal recessive pattern of inheritance. The disease is caused by mutations in the ATP7B gene, which is located on chromosome 13. This gene codes for a copper-transporting ATPase that is primarily expressed in the liver. A functioning ATP7B protein is necessary for two key processes: incorporating copper into ceruloplasmin (the main copper-carrying protein in blood) and excreting excess copper into the bile. In Wilson's disease, having two mutated copies of ATP7B renders this protein dysfunctional. As a result, copper cannot be excreted and accumulates to toxic levels, first in the liver and then in other organs, most notably the brain (especially the basal ganglia) and the cornea (causing Kayser-Fleischer rings). Options (a) and (b) are incorrect modes of inheritance for this condition.

47. (b) II, III and IV]

The management of severe hyperkalemia involves three strategies: stabilizing the cardiac membrane, shifting potassium into cells, and removing potassium from the body.

IV. Intravenous calcium gluconate is the first-line emergent treatment. It does not lower serum potassium but provides immediate cardiac membrane stabilization to protect against fatal arrhythmias.

II. Intravenous sodium bicarbonate (often given with insulin and glucose) is a cell-shifting therapy. It creates a temporary metabolic alkalosis, which drives potassium from the extracellular fluid into the intracellular compartment.

III. Oral sodium polystyrene sulphate (e.g., Kayexalate) is a cation-exchange resin. It works in the gastrointestinal tract to bind potassium in exchange for sodium, thereby removing potassium from the body. It has a slower onset of action.

I. Intravenous calcitonin is used to treat hypercalcemia by inhibiting bone resorption; it has no role in the management of hyperkalemia.

Therefore, the correct therapies for severe hyperkalemia from the list are II, III, and IV.

48. (b) Hypothyroidism

Hyponatremia is classified based on the patient's volume status: hypovolemic, euvolemic, or hypervolemic.

Euvolemic hyponatremia occurs when there is an increase in total body water but no significant change in total body sodium, leading to dilution. The classic causes are the Syndrome of Inappropriate Antidiuretic Hormone (SIADH), psychogenic polydipsia, and hypothyroidism. Severe hypothyroidism (myxedema) can reduce cardiac output and GFR, leading to a non-osmotic release of ADH and impaired free water excretion, resulting in euvolemic hyponatremia. Adrenocortical failure (a) (e.g., Addison's disease) causes hypovolemic hyponatremia due to mineralocorticoid deficiency, which leads to renal salt (sodium) wasting.

Nephrotic syndrome (c) causes hypervolemic hyponatremia. The massive protein loss leads to low oncotic pressure and third-spacing, causing edema and ascites, which triggers ADH release. Burns (d) cause massive fluid loss from the skin, leading to hypovolemic hyponatremia.

49. (b) Chrysops

Loa loa, the "African eye worm," is a filarial nematode that causes the disease loiasis, characterized by transient subcutaneous "Calabar" swellings and, most dramatically, the visible migration of the adult worm across the conjunctiva of the eye. This parasite is transmitted from human to human through the bite of a specific vector. The correct vector is the Chrysops fly, also commonly known as the deer fly or mangrove fly. These are day-biting flies found in the rain forests of West and Central Africa. Option (a), Simulium (black fly), is the vector for Onchocerca volvulus, the cause of river blindness. Option (c), Cyclops, is a freshwater copepod (crustacean) that serves as the intermediate host for Dracunculus medinensis (guinea worm). Option (d), Culicoides (biting midges), are vectors for Mansonella species.

50. (a) Incomplete paralysis in the first week

Bell's palsy is an acute, idiopathic peripheral facial nerve (CN VII) paralysis. While most patients recover well, the most reliable factor for predicting an excellent outcome is the degree of paralysis at presentation. Incomplete paralysis (paresis) in the first week is the single most favorable prognostic sign. It implies that the nerve has only undergone neurapraxia (a temporary conduction block) without significant axonal damage (axonotmesis). Over 90-95% of patients with incomplete paralysis will have a full and satisfactory recovery, often within a few weeks. In contrast, complete paralysis (plegia) has a more guarded prognosis. Option (c), evidence of denervation on electromyography (EMG) after 10 days, is actually a poor prognostic sign. It indicates that Wallerian degeneration of the axons has occurred, and recovery will be slower and may be incomplete. Option (d), pain behind the ear, is a common symptom but its prognostic value is debatable. Option (b), mild CSF lymphocytosis, is an inconsistent finding and not a strong clinical predictor of outcome.

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51. (a) Monobactams

The Monobactams (e.g., Aztreonam) are the correct answer. This class of be ta-lactam antibiotics has a unique spectrum of activity. Aztreonam is highly effective against most aerobic Gram-negative bacteria (including Pseudomonas aeruginosa) but is virtually ineffective against all Gram-positive bacteria (like Staphylococcus and Streptococcus) and anaerobic organisms. This specific spectrum makes it useful in patients with severe penicillin allergies who need Gram-negative coverage. In contrast, Glycopeptides (b) (e.g., Vancomycin) are a mainstay of treatment for severe Gram-positive infections, including MRSA. First-generation cephalosporins (d) (e.g., Cefazolin) are primarily used for their excellent coverage of Gram-positive cocci. Fluoroquinolones (c) (e.g., Ciprofloxacin, Levofloxacin) are broad-spectrum antibiotics, with later generations ("respiratory quinolones" like Levofloxacin) having enhanced activity against Gram-positive organisms, particularly Streptococcus pneumoniae. Therefore, monobactams are the only group listed that is inherently ineffective against Gram-positive bacteria.

52. (b) Type 2 Leprosy Reaction is an immune complex mediated syn- drome called arthus phenomenon

Type 2 Leprosy Reaction, also known as Erythema Nodosum Leprosum (ENL), is a systemic inflammatory complication that occurs in patients with lepromatous (LL) or borderline lepromatous (BL) leprosy. Statement (b) is correct in its immunological description. ENL is a systemic immune complex-mediated syndrome, specifically a Type III hypersensitivity reaction (similar to the Arthus phenomenon), where circulating immune complexes (formed from mycobacterial antigens and host antibodies) deposit in blood vessels and tissues, triggering widespread inflammation. Statement (a) is incorrect; it confuses the two reaction types. Type 1 Leprosy Reaction (reversal reaction) is a Type IV (delayed-type) hypersensitivity reaction. Statement (c) is incorrect; the classic "Lion face" or leonine facies, caused by diffuse infiltration and thickening of the facial skin, is a hallmark of advanced lepromatous leprosy, not tuberculoid leprosy. Statement (d) is incorrect; the nose (specifically the nasal mucosa and cartilage) is one of the earliest and most common sites of involvement in lepromatous leprosy, leading to chronic nasal stuffiness, crusting, and eventually septal perforation and the characteristic "saddle-nose" deformity.

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53. (d) Sporotrichosis

The clinical scenario is classic for Sporotrichosis, a fungal infection caused by Sporothrix schenckii. This fungus is found in soil, moss, and decaying vegetation (like roses or hay). The patient's occupation as a gardener and the history of a prick with a thorn are the key risk factors, as this is the typical mode of inoculation. The infection classically begins as a small, painless papule at the inoculation site (the right index finger). Over weeks, this papule enlarges to form an ulcerative nodule, which may have a purulent discharge. In its lymphocutaneous form, new nodules would subsequently appear proximally along the lymphatic channels, but the initial lesion is exactly as described. Mycetoma (b) typically presents with a triad of tumefaction, draining sinuses, and "grains" (colonies of the organism). Chromoblastomycosis (a) usually presents as warty, cauliflower-like plaques. Phaeohyphomycosis (c) is a rarer infection caused by dematiaceous (pigmented) fungi. The specific history of a thorn prick points strongly to Sporotrichosis.

54. (c) Corn

The patient's symptoms describe the classic "3 D's" of pellagra: Diarrhea (and other GI symptoms like mouth soreness), Dermatitis (the pigmented scaly rash), and Dementia (irritability, decreased appetite). The bright red tongue (glossitis) is also characteristic. The rash, when localized to the neck, is known as Casal's necklace. Pellagra is caused by a severe deficiency of Niacin (Vitamin B3). This deficiency can be caused by a diet heavily reliant on corn (maize). Corn contains niacin, but it is present in a bound form (niacytin) that is not biologically available unless it is first treated with an alkali (a process called nixtamalization, used in making tortillas). Furthermore, corn is also deficient in the amino acid tryptophan, which

the body can use to synthesize niacin. Therefore, a diet based predominantly on untreated corn is a major risk factor for pellagra. Rice (a) can lead to thiamine deficiency (beriberi). Wheat (b) is a source of niacin. Fish (d) is a good source of both niacin and tryptophan.

**55.** (b) Zinc

Acrodermatitis enteropathica is a rare autosomal recessive disorder caused by mutations in the SLC39A4 gene. This gene encodes a specific intestinal zinc transporter protein (Zip4) located on the apical membrane of enterocytes, which is crucial for absorbing dietary zinc from the small intestine. When this transporter is defective, the patient develops profound zinc deficiency, even with adequate dietary intake. The classic clinical triad, which typically appears in infants after they are weaned from breast milk, consists of:

1. Acrodermatitis: A characteristic pustular, eczematous, and erosive rash, symmetrically distributed around the body orifices (perioral, perianal) and on the distal extremities (acral).
2. Diarrhea: Chronic and severe.
3. Alopecia: Diffuse hair loss.

The condition is lifelong but highly treatable with high-dose oral zinc supplementation, which overcomes the defective absorption pathway. Iodine (a), Iron (c), and Selenium (d) are not related to this disorder.

**56.** (b) I, II and IV

Let's evaluate each statement regarding Vitamin A (retinol) and its precursor, carotene.

1. Statement I is correct. Chronic hypervitaminosis A (toxicity from repeated high doses of preformed retinol) can lead to significant liver damage (hepatotoxicity, fibrosis, and cirrhosis). Vitamin A is also a potent teratogen, and high doses are contraindicated in pregnancy due to the risk of birth defects.
2. Statement II is correct. Acute hypervitaminosis A (a single massive overdose) classically presents with symptoms of increased intracranial pressure (pseudotumor cerebri), causing headache, nausea, and vomiting, followed by widespread skin desquamation (peeling).
3. Statement IV is correct. Excessive intake of carotene (provitamin A found in plants like carrots) does not cause Vitamin A toxicity because the body regulates its conversion to retinol. However, the excess carotene deposits in the skin, causing a harmless condition called carotenemia, which manifests as a yellow-orange pigmentation, especially on the palms and soles.
4. Statement III is incorrect. Because high-dose Vitamin A is teratogenic, regular supplementation is not recommended for pregnant women, especially in non-endemic countries where deficiency is rare and a balanced diet is sufficient.

Therefore, the correct statements are I, II, and IV.

**57.** (a) Psoriasis

The Koebner phenomenon, also known as the isomorphic response, describes the development of new skin lesions (identical to the patient's underlying disease) at sites of cutaneous trauma or injury in otherwise unaffected skin. This phenomenon is a well-known feature of Psoriasis. For example, a psoriatic patient may develop a new, linear plaque of psoriasis along the line of a surgical incision or a scratch. While the Koebner phenomenon is not unique to psoriasis (it's also seen in lichen planus and vitiligo), it is a classic finding associated with it. Acne vulgaris (b) is a disorder of the pilosebaceous unit, not typically induced by trauma in this way. Behçet's disease (c) is associated with a "pathergy test," where a sterile needle prick induces a papule or pustule, which is a sign of non-specific hyperreactivity, distinct from the Koebner phenomenon's specific lesion formation. Leprosy (d) lesions are not characteristically induced by trauma.

**58.** (a) I only

The human hair growth cycle consists of three main phases. The statements in the question have confused the definitions of catagen and telogen.

1. Statement I is correct. Anagen is the active growth phase, during which the hair follicle is actively producing the hair fiber. This

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phase is long, lasting several years (2-7 years) for scalp hair, and determines the maximum length of the hair.
2. Statement II is incorrect. Telogen is the resting phase, not the transitional phase. During telogen, the hair follicle is dormant, and the hair fiber (a "club hair") is anchored in the follicle but no longer growing. This phase lasts for about 3-4 months before the hair is shed.
3. Statement III is incorrect. Catagen is the transitional phase (or involutional phase), not the resting phase. This is a short, 2-3 week phase where the hair follicle stops producing the hair fiber, detaches from its blood supply, and begins to shrink.

Therefore, only the first statement, "Anagen is a phase of active hair growth," is correct.

**59.** (d) II, III and IV

Oculocutaneous albinism (OCA) is a group of inherited disorders of melanin synthesis, not melanocyte destruction.

1. Statement I is incorrect. In OCA, melanocytes (the pigment-producing cells) are present in normal numbers, but their ability to produce melanin pigment is absent or reduced due to a genetic defect in the synthesis pathway. Destruction of melanocytes is the pathophysiology of vitiligo, not albinism.
2. Statement II is correct. Type 1 OCA is caused by mutations in the TYR gene, which codes for the enzyme tyrosinase. This enzyme is the rate-limiting step in the melanin synthesis pathway. A complete absence of tyrosinase activity (OCA1A) results in no melanin production.
3. Statement III is correct. Melanin is crucial for the normal development of the optic pathways. Its absence leads to foveal hypoplasia, misrouting of optic nerves at the chiasm, and reduced retinal pigment. This results in characteristic ocular findings, including poor vision, nystagmus (often rotatory), and strabismus.
4. Statement IV is correct. Melanin's primary function in the skin is to protect it from ultraviolet (UV) radiation. The absence of this protective pigment makes patients with albinism extremely susceptible to sunburn and markedly increases their lifetime risk of developing skin cancers, particularly squamous cell carcinoma.

Therefore, the correct statements are II, III, and IV.

**60.** (c) Pathergy test

The clinical triad of recurrent oral ulcers, genital ulcers, and ocular inflammation (e.g., uveitis, conjunctivitis, causing "redness of eye") is highly characteristic of Behçet's disease. Behçet's is a systemic vasculitis of unknown etiology. While the diagnosis is primarily clinical, based on these recurrent symptoms, a specific test can support it. The Pathergy test is the correct answer. This test involves pricking the skin of the forearm with a sterile needle. In a patient with Behçet's disease, their non-specific hyperreactive inflammatory response will cause a sterile papule or pustule (a positive result) to form at the prick site within 24-48 hours. While not all patients with Behçet's are pathergy-positive (specificity varies by geography), it is a characteristic finding used in some diagnostic criteria. A Mantoux test (a) is for tuberculosis. A Patch test (d) is for diagnosing allergic contact dermatitis. A drug-sensitivity test (b) is too general and not specific to this syndrome.

**61.** (c) I, II and IV only

Osteoarthritis (OA) is a degenerative joint disease that preferentially affects certain "load-bearing" and "high-use" joints.

I. First metatarsophalangeal (MTP) joint: This joint (the base of the big toe) is a very common site for OA, leading to a condition known as hallux rigidus.
II. Proximal interphalangeal (PIP) joint: The PIP joints of the hand are a classic site for OA, along with the distal interphalangeal (DIP) joints. Involvement of these joints leads to the formation of characteristic bony nodules (Bouchard's nodes at the PIPs, Heberden's nodes at the DIPs).
IV. 5th and 6th cervical vertebrae joint: The cervical spine (and lumbar spine) are extremely common sites for OA, also known as spondylosis. The C5-C6 level is one of the most frequently affected areas

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due to its high mobility, leading to neck pain and radiculopathy.

III. Ankle joint: The ankle joint (tibiotalar joint) is classically spared in primary osteoarthritis. When OA does occur in the ankle, it is almost always secondary to a significant previous trauma, such as a fracture or severe sprain.

Therefore, the commonly affected joints listed are the first MTP, the PIPs, and the cervical spine (I, II, and IV).

**62.** (b) I, II and IV

The term "reversible dementia" refers to a dementia-like clinical syndrome (cognitive decline) that can be cured or significantly improved by treating the underlying cause.

I. Hypothyroidism : Severe, untreated hypothyroidism (myxedema) can cause significant cognitive slowing, apathy, and memory problems that mimic dementia, which is reversible with thyroid hormone replacement.

II. Vitamin B12 deficiency: As seen in pernicious anemia or long-term vegan diets, B12 deficiency can cause a range of neuropsychiatric symptoms, including memory loss, confusion, and cognitive decline, which can be reversed with B12 supplementation if caught early.

IV. Thiamine (B1) deficiency: This deficiency, most often seen in chronic alcoholism, causes Wernicke-Korsakoff syndrome. The Korsakoff syndrome component is a profound amnesia and confabulation that represents a form of dementia. The acute Wernicke's encephalopathy is reversible with high-dose thiamine, and early treatment may prevent or improve the chronic Korsakoff syndrome.

III. Dementia with Lewy bodies (DLB): This is a primary neurodegenerative disorder, similar to Alzheimer's and Parkinson's disease. It is characterized by the presence of Lewy bodies in the brain. DLB is a progressive and irreversible cause of dementia.

Therefore, the reversible causes listed are hypothyroidism, Vitamin B12 deficiency, and thiamine deficiency (I, II, and IV).

**63.** (a) I, II and III

Frontotemporal Dementia (FTD) is a group of neurodegenerative disorders that primarily affect the frontal and temporal lobes of the brain.

I. Personality change: This is a hallmark feature, especially of the behavioral variant (bvFTD). The frontal lobe involvement leads to profound changes in behavior, social conduct, and personality, such as disinhibition, apathy, loss of empathy, and compulsive behaviors.

II. Language disturbance: This is the primary feature of the language variants of FTD, known as Primary Progressive Aphasia (PPA). This can manifest as difficulty producing speech (non-fluent PPA) or difficulty understanding the meaning of words (semantic PPA).

III. Memory may be preserved in early stages: This is a key feature that distinguishes FTD from Alzheimer's disease. In early FTD, episodic memory (memory for recent events) is often relatively intact, while behavior and language are the first domains to be affected.

IV. Anti-cholinesterases are the drug of choice for treatment: This statement is incorrect. Anticholinesterase inhibitors (like donepezil), which are a standard treatment for Alzheimer's disease, are not effective in FTD and can sometimes even worsen behavioral symptoms. There are currently no disease-modifying drugs for FTD.

Therefore, the correct clinical features listed are I, II, and III.

**64.** (d) Oligodendrocyte

Myelin is a lipid-rich sheath that insulates nerve axons, allowing for rapid and efficient conduction of electrical signals (saltatory conduction). The cells that produce this myelin sheath differ between the Central Nervous System (CNS) and the Peripheral Nervous System (PNS).

The Oligodendrocyte (d) is the myelinating glial cell of the Central Nervous System (which consists of the brain and spinal cord). A single

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oligodendrocyte can myelinate multiple (up to 50) different axons.

In contrast, the Schwann cell (c) is the myelinating cell of the Peripheral Nervous System (nerves outside the brain and spinal cord). A single Schwann cell myelinates only one segment of one axon.

Astrocytes (a) are glial cells in the CNS that provide metabolic support to neurons, maintain the blood-brain barrier, and regulate the ion balance.

Microglia (b) are the resident immune cells (macrophages) of the CNS, responsible for phagocytosis and immune surveillance.

**65.** (a) Transverse white lines on nails of fingers and toes

Mee's lines are a specific finding seen on the nails (not the skin). They are correctly described as transverse white lines (leukonychia striata) on the nails of the fingers and toes. These lines are non-palpable and move distally as the nail grows. They are caused by a temporary disruption of the nail matrix (the tissue that produces the nail plate) during a period of systemic stress or poisoning. While classically associated with chronic arsenic poisoning, they are not specific and can also be seen after heavy metal poisoning (like thallium), severe systemic illness (like heart failure or chemotherapy), or significant infection. The lines form in the nail plate itself, indicating a poisoning event that occurred weeks to months prior, depending on their position on the nail. The other options describing lines on the skin or red lines on the nails are incorrect.

**66.** (d) I and IV

Fomepizole is a potent antidote specifically used for poisoning with toxic alcohols. It works as a competitive inhibitor of the enzyme alcohol dehydrogenase (ADH). This enzyme is responsible for the first, rate-limiting step in the metabolism of these alcohols. By blocking ADH, fomepizole prevents the conversion of the parent compounds into their highly toxic acidic metabolites.

I. Methanol is metabolized by ADH to formic acid, which causes severe metabolic acidosis and permanent blindness.

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IV. Ethylene glycol (found in antifreeze) is metabolized by ADH to glycolic acid and oxalic acid, which cause severe metabolic acidosis and acute renal failure (due to oxalate crystal deposition).

Fomepizole is the standard antidote for both.

II. Digoxin toxicity is treated with Digoxin-specific antibody fragments (DigiFab).

III. Cocaine toxicity management is supportive, often using benzodiazepines for agitation and vasodilation for hypertension, but there is no specific antidote like fomepizole.

Therefore, fomepizole is used for methanol and ethylene glycol poisoning (I and IV).

**67.** (c) I, III and IV

The 4AT is a widely used, rapid screening tool for delirium and cognitive impairment. Its name ("4A Test") comes from its four main components. These components are:

1. Alertness (I): This assesses the patient's level of consciousness. An abnormal score is given if the patient is clearly drowsy (lethargic) or agitated/hyperactive.
2. AMT4 (Abbreviated Mental Test - 4) (III): This is a brief test of orientation, asking for the patient's age, date of birth, place (name of hospital/building), and the current year.
3. Attention (IV): This tests the ability to pay attention. The patient is asked to recite the months of the year in reverse order ("December, November...").
4. Acute change or fluctuating course: The assessor determines if there has been an acute change or fluctuation in the patient's mental status (Alertness, cognition, or other mental function) over the last 2 weeks and/or today. (This 4th component is not listed as an option, but the first three are).
5. Apnoea (II), which is the cessation of breathing, is not part of the 4AT. It is a sign of respiratory distress or sleep disorders.

Therefore, the parameters included in the 4AT from the list are Alertness (I), AMT4 (III), and Attention (IV).

**68.** (d) GGT>35 U/L and CDT>20 U/L

Biomarkers for heavy alcohol consumption are used to objectively screen for and monitor

alcohol use disorders. No single marker is perfect, so combinations are often used.

Gamma-glutamyl transferase (GGT) is an enzyme that becomes elevated due to alcohol's inductive effect on the liver. It is sensitive but not very specific.

Carbohydrate-deficient transferrin (CDT) is a more specific marker. Chronic, heavy alcohol consumption (typically > 50-80 g/day for 2-3 weeks) interferes with the glycosylation of transferrin, leading to an increase in isoforms lacking carbohydrate side chains.

The combination of an elevated GGT (e.g., > 35 U/L) and an elevated CDT (e.g., > 20 U/L) (d) is a well-established strategy to improve both sensitivity and specificity for detecting recent, heavy alcohol use, often exceeding 60% for both metrics.

Option (a) is less specific, as alkaline phosphatase is not a primary alcohol marker. Option (b) is incorrect as a low uric acid is not typical. Option (c) is incorrect; while a high MCV (macrocytosis) is a marker of chronic alcoholism, combining it with a normal CDT would not be a strong indicator.

**69.** (a) Physostigmine

Belladonna, also known as deadly nightshade, contains the toxic alkaloids atropine and scopolamine. These substances are potent anticholinergics (or muscarinic antagonists). They work by blocking acetylcholine receptors, leading to the classic anticholinergic toxidrome: "mad as a hatter" (delirium, hallucinations), "blind as a bat" (dilated pupils, blurred vision), "red as a beet" (flushed skin), "hot as a hare" (fever), and "dry as a bone" (dry mouth, urinary retention).

The specific antidote for this poisoning is Physostigmine (a). Physostigmine is a cholinesterase inhibitor that can cross the blood-brain barrier (it's a tertiary amine). It works by inhibiting the enzyme that breaks down acetylcholine, thereby increasing the amount of acetylcholine in the synapse to overcome the blockade caused by the belladonna alkaloids.

Atropine (c) is the cause of the poisoning, not the antidote. Amitriptyline (b) is a tricyclic antidepressant that also has strong anticholinergic properties and would worsen the toxicity. Flumazenil (d) is the antidote for benzodiazepine overdose.

**70.** (b) Prussian blue

Thallium is a highly toxic heavy metal. After ingestion, it is well-absorbed from the gastrointestinal (GI) tract and also undergoes significant enterohepatic and entero-enteric circulation (it is secreted back into the gut and then reabsorbed). The standard and most effective treatment to prevent this absorption and reabsorption is Prussian blue (ferric hexacyanoferrate). Prussian blue is administered orally (often via a nasogastric tube). It is not absorbed from the GI tract. Instead, it passes through the gut and acts as an ion-exchange resin, effectively binding thallium ions in exchange for potassium ions. This binding forms an insoluble complex that is then excreted in the feces, preventing both initial absorption and subsequent reabsorption. Penicillamine (c) is a chelating agent used to enhance systemic elimination (urinary excretion) of thallium after it has been absorbed, but it doesn't block GI absorption. Potassium permanganate (d) was historically used for gastric lavage in some poisonings but is not the antidote for thallium.

**71.** (b) Cholinergic

The patient's presentation as a farmer who consumed a pesticide, along with symptoms of frequent urination and excessive salivation, is classic for a cholinergic toxidrome. Many pesticides, particularly organophosphates and carbamates, are irreversible or reversible inhibitors of the enzyme acetylcholinesterase. This inhibition leads to a massive excess of acetylcholine in neuronal synapses and at neuromuscular junctions, causing overstimulation of both muscarinic and nicotinic receptors. The muscarinic effects are summarized by the mnemonic DUMBBELS:

1. Diarrhea
2. Urination (frequent urination)
3. Miosis (constricted pupils)
4. Bradycardia
5. Bronchospasm
6. Emesis (vomiting)
7. Lacrimation (tearing)
8. Salivation (excessive salivation)

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The patient's symptoms are cornerstone features of this toxidrome. Adrenergic (sympathomimetic) (c) would cause dry mouth and urinary retention. Serotonergic (a) involves clonus and hyperreflexia. Hypnotic (d) involves sedation and respiratory depression.

**72.** (a) I and III

Salicylate (aspirin) poisoning classically causes a mixed acid-base disorder.

1. Respiratory Alkalosis: Salicylates directly stimulate the respiratory center in the brainstem, causing hyperventilation. This leads to a low $pCO_2$ (e.g., 20 mm Hg (III)).
2. Metabolic Acidosis: Salicylates uncouple oxidative phosphorylation and inhibit Krebs cycle enzymes, leading to the accumulation of organic acids (like lactate and ketoacids). This results in a high anion gap metabolic acidosis. A normal anion gap is ~10-12 mmol/L, so an anion gap of 18 mmol/L (I) is high and consistent with this.

In the early stages, the respiratory alkalosis may dominate (high pH). In the later, more severe stages (as seen in this question), the metabolic acidosis dominates, resulting in an acidemia (low pH). The classic finding in severe salicylate toxicity is therefore a combination of low pH (acidemia), a high anion gap, and a compensatory low $pCO_2$.

The combination of pH 7.25 (I), anion gap 18 (I), and $pCO_2$ 20 (III) perfectly describes this mixed disorder. A $pCO_2$ of 48 (IV) would represent respiratory acidosis, which is the opposite of what occurs. An anion gap of 10 (II) is normal and inconsistent with salicylate poisoning.

**73.** (b) I and II

Heat stroke is divided into two main types: classic (non-exertional) and exertional.

1. Classic heat stroke typically occurs in individuals who cannot escape or control their environment during a heat wave. This makes older patients (I), as well as the very young and those with chronic illnesses, the typical victims. Because the onset is passive (not due to exercise), rhabdomyolysis and lactic acidosis are uncommon. Electrolyte disturbances can be variable, but patients are often dehydrated (hypernatremic) or may have normokalemia (II) (or hypokalemia) due to respiratory alkalosis from hyperventilation (tachypnea).
2. Exertional heat stroke occurs in young, healthy individuals (like athletes or soldiers) undergoing strenuous physical activity. This form is characterized by marked lactic acidosis (IV) from muscle exertion and often rhabdomyolysis, which can lead to hyperkalemia.
3. Hyponatremia (III) is not typical of classic heat stroke; dehydration and hypernatremia are more common. If hyponatremia is present, it might suggest excessive water replacement without electrolytes (exertional hyponatremia).

Therefore, the features typical for classic heat stroke are older patient (I) and normokalemia (II).

**74.** (b) II, III and IV

Weil's disease is the severe, icteric (ja1undice) form of leptospirosis.

1. Statement I is incorrect. Leptospirosis is caused by a spirochete bacterium of the genus Leptospira (e.g., L. interrogans), not a virus.
2. Statement II is correct. Weil's disease is a severe systemic infection classically defined by a triad of jaundice, bleeding, and acute kidney injury (AKI). This AKI is often severe and non-oliguric (high output), but it can lead to oliguria (low urine output) in the most severe cases.
3. Statement III is correct. The serological gold standard for diagnosis is the Microscopic Agglutination Test (MAT). This test detects antibodies in the patient's serum that react against a panel of live Leptospira serovars. A four-fold rise in titer between acute and convalescent samples is diagnostic.
4. Statement IV is correct. For severe leptospirosis (Weil's disease), parenteral (intravenous) antibiotics are required. Ceftriaxone is a first-line drug of choice, along with Penicillin G.

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Therefore, the correct statements are II, III, and IV.

**75.** (a) I, II and III

The SOFA (Sequential Organ Failure Assessment) score is used in intensive care units to track a patient's organ function status and disease severity. It assesses six organ systems, grading each from 0 (normal) to 4 (most abnormal). The components are:

1. Respiration: Assessed by the $PaO_2/FiO_2$ ratio (I).
2. Cardiovascular: Assessed by mean arterial pressure (MAP) (II) and the need for vasopressor medications.
3. Neurologic: Assessed by the Glasgow Coma Scale (GCS) (III).
4. Coagulation: Assessed by the platelet count, not Prothrombin Time.
5. Liver: Assessed by the bilirubin level.
6. Renal: Assessed by the creatinine level or urine output.

Therefore, the components listed that are part of the SOFA score are the $PaO_2/FiO_2$ ratio (I), Mean arterial pressure (II), and Glasgow Coma Scale (III). Prothrombin Time with INR (IV) is used to assess the liver's synthetic function but is not the coagulation parameter used in the SOFA score; platelet count is.

**76.** (b) I, II and IV

The diagnosis of brain death (death by neurologic criteria) requires demonstrating the irreversible cessation of all function of the entire brain, including the brainstem. The three cardinal findings are:

1. Irreversible and unresponsive coma (IV): The patient must have a known, irreversible cause of coma and show no purposeful response to any stimuli.
2. Absent brainstem reflexes (I): This involves a battery of tests, including absent pupillary light reflex, absent corneal reflexes, absent oculocephalic (doll's eyes) and vestibulo-ocular (cold caloric) reflexes, and absent gag and cough reflexes.
3. Apnoea (II): This is confirmed with an apnoea test. The patient is disconnected from the ventilator (while being pre-oxygenated) to see if a rising $PCO_2$ (e.g., to $>$ 60 mmHg or 20 mmHg above baseline) will stimulate the respiratory drive centers in the brainstem. If no respiratory effort is seen despite this potent stimulus, brainstem function is absent.

Hypothermia (III) (core temperature $<$ 36°C) is a confounding factor that must be corrected before brain death testing can be performed. A hypothermic patient can appear to be brain dead, but the state may be reversible with rewarming. Thus, hypothermia invalidates, and is not a component of, the diagnosis.

Therefore, the correct components are I, II, and IV.

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**77.** (b) Saccular aneurysm rupture

A subarachnoid hemorrhage (SAH) is bleeding into the subarachnoid space, the area between the arachnoid and pia mater. While the most common cause of SAH overall is head trauma, the question specifies non-traumatic SAH. The most common cause of spontaneous, non-traumatic SAH, accounting for approximately 80-85% of cases, is the rupture of a saccular (berry) aneurysm. These are small, berry-shaped outpouchings of blood vessels, typically located at bifurcations in the Circle of Willis at the base of the brain. The rupture leads to a sudden, high-pressure arterial bleed into the subarachnoid space, causing the classic "thunderclap headache." Arteriovenous malformations (AVMs) (a) are another cause of intracranial bleeding, but they are less common than aneurysms as a cause of SAH (they more often cause intracerebral hemorrhage). Extension from a primary intracerebral hemorrhage (c) can occur, but it is not the most common primary cause.

**78.** (c) Type III respiratory failure

Respiratory failure is classified into four main types. Type III respiratory failure is defined as peri-operative respiratory failure. This type is specifically related to the effects of anesthesia, surgery, and the immediate post-operative period. It is primarily caused by atelectasis, the collapse of alveoli. Atelectasis occurs due to multiple factors in the peri-operative setting: general anesthesia suppresses breathing and

cough reflexes, supine positioning reduces lung volumes (functional residual capacity), and abdominal or thoracic surgery causes pain that limits deep breathing (splinting). This widespread alveolar collapse leads to shunting (blood passing through unventilated lung) and profound hypoxemia. Type I (a) is hypoxemic respiratory failure (e.g., pneumonia, ARDS). Type II (b) is hypercapnic respiratory failure (e.g., COPD, neuromuscular disease). Type IV (d) is respiratory failure due to shock or hypoperfusion of respiratory muscles.

**79.** (c) Cardiac apex

The murmur of mitral regurgitation (MR) is caused by the backward (regurgitant) flow of blood from the left ventricle (LV) into the left atrium (LA) during systole, due to an incompetent mitral valve. This sound is generated at the mitral valve itself. The mitral valve's surface anatomy location, and the point where its sounds are best heard (the point of maximal impulse), is the cardiac apex. This is typically located in the 5th left intercostal space at the mid-clavicular line. The murmur of MR is classically a pansystolic (holosystolic), high-pitched, "blowing" murmur, heard best at the apex and often radiating to the axilla. The tricuspid area (a) (left lower sternal border) is where tricuspid regurgitation is heard. The aortic area (b) (right upper sternal border) is for aortic stenosis. The pulmonary area (d) (left upper sternal border) is for pulmonary valve sounds.

**80.** (b) Burch-Wartofsky score

This patient's presentation—a known hyperthyroid patient on Carbimazole (an antithyroid drug) who acutely stops her medication and now has fever, agitation, and delirium (signs of severe CNS and thermoregulatory dysfunction)—is classic for thyroid storm (thyrotoxic crisis). Thyroid storm is a life-threatening exaggeration of thyrotoxicosis. The Burch-Wartofsky score is the specific clinical scoring system designed to diagnose and assess the severity of thyroid storm. It assigns points based on the severity of manifestations in multiple systems: thermoregulation (fever), central nervous system (agitation, delirium, coma), cardiovascular (tachycardia, atrial fibrillation, heart failure), and gastrointestinal-hepatic (nausea, vomiting, jaundice). A high score confirms the diagnosis and indicates high severity. The DAS 28 score (a) assesses disease activity in Rheumatoid Arthritis. The EDSS (c) tracks disability in Multiple Sclerosis. The SOFA score (d) assesses organ failure in sepsis and critical illness in general, but is not specific for thyroid storm.

**81.** (d) Basal ganglia

Wilson's disease is a genetic disorder of copper metabolism, leading to toxic copper accumulation in various organs, most notably the liver and brain. The neurologic manifestations (dystonia, tremor, parkinsonism, dysarthria) are a direct result of this copper deposition in the brain. The area of the brain with the strongest predilection for copper accumulation and subsequent damage is the basal ganglia, specifically the putamen and globus pallidus. On MRI, this can manifest as high signal intensity (hyperintensity) in these structures on T2-weighted images. A classic (though less common) finding is the "face of the giant panda" sign, which is seen in the midbrain due to signal changes in the tegmentum and red nucleus. While the thalamus (c) and cerebellum (a) can also be involved, the basal ganglia (especially the putamen) are the most characteristic and commonly affected sites on imaging.

**82.** (a) I, II and III

Secondary iron overload (hemosiderosis) refers to iron accumulation that is not caused by the primary genetic defect of hemochromatosis (HFE gene mutation).

I. Transfusion-related iron load: This is a major cause. Each unit of packed red blood cells contains 200-250 mg of iron. Patients who require chronic blood transfusions (e.g., for sickle cell disease, MDS, or thalassemia) have no physiologic way to excrete this excess iron, leading to progressive overload.

II. Thalassemia: This condition contributes to iron overload in two ways. First, patients with severe thalassemia (like beta-thalassemia major) are transfusion-

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dependent, leading to the mechanism described in (I). Second, even without transfusions, the underlying ineffective erythropoiesis (abnormal RBC production in the marrow) leads to the release of signals (like hepcidin suppression) that increase dietary iron absorption, further worsening the iron load.

III. Hepatitis C associated liver disease: Chronic liver disease, particularly from Hepatitis C, can disrupt normal iron regulation. The liver is the central organ for iron metabolism (producing hepcidin), and chronic inflammation and cirrhosis can lead to increased iron uptake and deposition in the liver.

Therefore, all three conditions listed are recognized causes of secondary iron overload.

**83.** (c) I, III and IV

Alzheimer's disease (AD) is the most common cause of dementia, characterized by progressive neurodegeneration.

I. It is a disorder of cerebral cortical function: This is correct. AD is a quintessential cortical dementia. The pathology (amyloid plaques and tau tangles) begins in the temporal lobes (affecting memory) and spreads throughout the cerebral cortex, leading to global cognitive decline, aphasia, apraxia, and agnosia.

III. Patients deny that there is anything wrong: This is a common and characteristic feature known as anosognosia, or lack of insight. As the disease progresses (particularly with frontal lobe involvement), patients often become unaware of their deficits and may deny any memory or functional problems.

IV. Depression is commonly present: This is correct. Depression and apathy are very common neuropsychiatric symptoms in AD. Depression can be a comorbid condition or an early symptom of the disease itself.

II. Only short term memory is affected: This is incorrect. While impairment of short-term memory (episodic memory) is the earliest and most prominent cognitive symptom, AD is a progressive disease. As it advances, it also affects long-term memory, language, visuospatial skills, and executive function, leading to a global dementia.

Therefore, the correct features listed are I, III, and IV.

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**84.** (a) Central Nervous System

The glymphatic system is the correct answer. It is a recently discovered macroscopic waste clearance system for the Central Nervous System (CNS). The CNS (brain and spinal cord) was long thought to lack a conventional lymphatic system. The glymphatic system describes a unique mechanism: cerebrospinal fluid (CSF) from the subarachnoid space flows into the brain parenchyma along the outside of penetrating arteries (in para-arterial spaces). This CSF then moves through the brain's interstitial space (the "interstitium"), mixing with interstitial fluid (ISF) and collecting metabolic waste products (like amyloid-beta). This fluid mixture is then cleared from the brain, flowing out along para-venous spaces. This entire process is facilitated by astrocytes (a type of glial cell), which is why it is named the "glial-lymphatic" or "glymphatic" system. It is most active during sleep and is crucial for brain homeostasis.

**85.** (a) Stool sample at 2-3 days interval should be examined for cysts

The diagnosis of giardiasis, caused by the protozoan Giardia lamblia, is typically made by identifying the organism in stool. Statement (a) is correct because Giardia excretion in feces is intermittent. A single stool sample may be negative even in an infected person. Therefore, the standard recommendation is to collect and examine multiple stool samples (usually three) at 2-3 day intervals to maximize the diagnostic yield of finding either the cysts (the infective form) or the trophozoites. Statement (b) is incorrect; the string test (entero-test), where a gelatin capsule on a string is swallowed, is used to sample duodenal fluid to look for trophozoites (the motile, feeding stage), not cysts. Statement (c) is incorrect; Giardia is a protozoan and does not have a larval stage. A jejunal biopsy would show trophozoites adhering to the mucosa. Statement (d) is incorrect; the cyst form is the environmentally resistant stage. It is very hardy

and can remain viable in cold, fresh water for several months (not just one week), which is why it is a common cause of waterborne outbreaks.

**86.** (a) Gait and balance

The 'Timed Up and Go' (TUG) test, often shortened to 'get up and go test', is a standard component of a geriatric assessment. It is a simple and quick test used to evaluate a person's gait, balance, and mobility, and to assess their risk of falls. The test involves observing and timing the patient as they perform a sequence of movements:

1. Stand up from a standard armchair.
2. Walk a short distance (usually 3 meters or 10 feet).
3. Turn around.
4. Walk back to the chair.
5. Sit back down.

An older adult who takes more than 12-14 seconds to complete this task is considered to have impaired mobility and is at an increased risk for falls. Cognition (b) is assessed with tests like the MMSE or MoCA. Urinary incontinence (d) is assessed by history and specific questionnaires. Driving ability (c) involves a more complex assessment, though the TUG test results may be one small part of that decision.

**87.** (b) Oral Colchicine

The primary goal in treating an acute gout attack is to rapidly relieve the intense pain and inflammation caused by urate crystals in the joint. The first-line options for this are:

1. Non-steroidal anti-inflammatory drugs (NSAIDs) (e.g., indomethacin, naproxen)
2. Oral Colchicine
3. Corticosteroids (oral or intra-articular injection)

Oral colchicine (b) is a classic and effective first-line therapy, especially when given within the first 12-24 hours of an attack. It works by inhibiting neutrophil migration and phagocytosis, thereby reducing the inflammatory response. Allopurinol (c) is a urate-lowering therapy (a xanthine oxidase inhibitor) used for the chronic, long-term management of gout to prevent future attacks. It is contraindicated to start allopurinol during an acute attack, as it can mobilize urate stores and worsen or prolong the flare. Methotrexate (a) and Sulfasalazine (d) are DMARDs (disease-modifying antirheumatic drugs) used for conditions like rheumatoid arthritis, not for acute gout.

**88.** (c) Triangle of safety

The insertion of an intercostal chest drain (tube thoracostomy) is a common procedure for treating a pneumothorax. To minimize the risk of injuring underlying structures (like the lung, diaphragm, liver, or internal mammary artery), a specific anatomical landmark is used. This is the "Triangle of Safety". This triangle is considered the safest and most appropriate site for chest drain insertion. Its borders are:

1. Anterior border: The lateral edge of the pectoralis major muscle.
2. Posterior border: The lateral edge of the latissimus dorsi muscle.
3. Apex: The axilla (armpit).
4. Base: A horizontal line at the level of the 4th or 5th intercostal space (often at the level of the nipple in males).

Hesselbach's triangle (a) is in the inguinal region, related to inguinal hernias. The Triangle of Petit (b) (petilis triangle) is in the lumbar region. The Triangle of Auscultation (d) is on the back, where breath sounds are heard more clearly.

**89.** (b) Andexanet Alfa

Rivaroxaban and Apixaban are Direct Oral Anticoagulants (DOACs) that work by directly inhibiting Factor Xa. In cases of life-threatening or uncontrolled bleeding, a specific reversal agent is needed. Andexanet Alfa is the correct antidote. It is a recombinant, modified version of human Factor Xa that acts as a "decoy." It binds to Rivaroxaban and Apixaban with high affinity, sequestering them away from the body's natural Factor Xa, thereby restoring normal hemostasis. Idarucizumab (a) is also a specific antidote, but it is for Dabigatran (a direct thrombin inhibitor), not the Factor Xa inhibitors. Hydroxocobalamin (c) is an antidote for cyanide poisoning. Glucarpidase (d) is an antidote used to rapidly lower toxic levels of methotrexate.

**90.** (a) I and II only

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The mediastinum is divided into anterior (or anterosuperior), middle, and posterior compartments. Different types of masses have a predilection for specific compartments.

I. Goitre: A retrosternal or substernal goitre (an enlarged thyroid gland) often descends from the neck into the superior and anterior mediastinum.
II. Thymic tumour: The thymus gland is located in the anterior mediastinum. Therefore, thymic tumours (like thymoma) are a classic cause of anterior mediastinal masses. The "4 T's" mnemonic for anterior mediastinal masses is: Thymoma, Teratoma (germ cell tumors), Thyroid (goitre), and Terrible Lymphoma.
III. Neurogenic tumour: These tumours (e.g., schwannoma, neurofibroma) arise from nerve-related structures. The vast majority (>90%) of neurogenic tumours are located in the posterior mediastinum, arising from the sympathetic ganglia or intercostal nerves.

Therefore, the common causes of superior and anterior mediastinal masses from the list are Goitre (I) and Thymic tumour (II).

**91.** (c) Idarucizumab

Dabigatran (Pradaxa) is a Direct Oral Anticoagulant (DOAC) that works by directly inhibiting thrombin (Factor IIa). In the event of life-threatening bleeding or the need for emergency surgery, a specific reversal agent is required. Idarucizumab (Praxbind) is the correct antidote. It is a humanized monoclonal antibody fragment (Fab) that binds to dabigatran and its metabolites with extremely high affinity, rapidly and completely neutralizing their anticoagulant effect. Protamine (d) is the antidote for heparin. Desferrioxamine (b) is a chelating agent used to treat iron overload. Glucarpidase (a) is an enzyme used to clear toxic levels of methotrexate.

**92.** (b) Small bowel stricture

Wireless capsule endoscopy involves swallowing a "pill-cam" that takes thousands of pictures as it passes through the gastrointestinal tract, primarily to visualize the small intestine. The absolute contraindication for this procedure is a known or suspected small bowel stricture (b). A stricture is a narrowing of the intestinal lumen. If the capsule is swallowed, it can become lodged or impacted at the site of the stricture, causing a complete bowel obstruction, which is a medical emergency often requiring surgical removal. Obscure gastrointestinal bleeding (c) (where upper endoscopy and colonoscopy are negative) is the most common indication for capsule endoscopy. Coeliac disease (a) and small bowel Crohn's disease (d) are also indications for the procedure, as it can be used to assess the extent of mucosal damage or inflammation in these conditions. However, in these cases (especially Crohn's), a patency capsule is often given first to rule out an unknown stricture before the more expensive diagnostic capsule is used.

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**93.** (b) Corynebacterium minutissimum

Erythrasma is a common, superficial bacterial skin infection that typically affects the intertriginous areas (skin folds), such as the axillae, groin, and toe webs. It presents as well-defined, reddish-brown patches with fine scale. The causative organism is Corynebacterium minutissimum. This bacterium is part of the normal skin flora but can overgrow in conditions of heat and humidity. A characteristic diagnostic feature is that the rash fluoresces a coral-red color when examined under a Wood's lamp. This fluorescence is due to porphyrins (specifically coproporphyrin III) produced by the bacteria. Corynebacterium diphtheriae (c) causes diphtheria. The other two species are less common human pathogens; C. pseudotuberculosis (a) causes lymphadenitis, and C. matruchotii (d) is found in dental plaque.

**94.** (b) Pre-hepatic presinusoidal - Portal vein thrombosi

Portal hypertension is classified based on the anatomical location of the obstruction to blood flow.

1. Pre-hepatic: Obstruction before the liver.
2. Intra-hepatic: Obstruction within the liver.
3. Post-hepatic: Obstruction after the liver.
4. The intra-hepatic category is further divided into pre-sinusoidal, sinusoidal, and post-sinusoidal.

Let's analyze the options:

(a) Veno-occlusive disease (now Sinusoidal Obstruction Syndrome) causes obstruction of the terminal hepatic venules and sinusoids. This is an intra-hepatic post-sinusoidal (or sinusoidal) cause, not just sinusoidal.

(b) Portal vein thrombosis is a blockage of the main portal vein before it enters the liver. This is the classic example of a pre-hepatic presinusoidal cause of portal hypertension. This statement is correctly matched.

(c) Cirrhosis is the most common cause of portal hypertension. The fibrosis and regenerative nodules distort the liver architecture, causing obstruction primarily at the sinusoidal level. This is an intra-hepatic sinusoidal cause, not pre-sinusoidal.

(d) Schistosomiasis (hepatic form) causes "pipe-stem" fibrosis around the portal tracts due to egg deposition. This obstructs the small portal vein branches within the liver but before the sinusoids. This is a classic intra-hepatic pre-sinusoidal cause, not post-hepatic.

**95.** (d) Medication overuse headache

Headaches are broadly classified into primary and secondary types.

1. Primary headaches are idiopathic disorders where the headache itself is the disease. This category includes Migraine (a), Tension-type headache (b), and the Trigeminal autonomic cephalalgias (c) (which includes cluster headache and paroxysmal hemicrania).
2. Secondary headaches are those that are a symptom of an underlying structural, metabolic, or systemic problem. Examples include headache due to brain tumors, subarachnoid hemorrhage, meningitis, or substance use/withdrawal. Medication overuse headache (d) (MOH), also known as rebound headache, is a classic example of a secondary headache. It is caused by the chronic, excessive use of acute headache medications (like analgesics or triptans), which paradoxically leads to the development of a chronic daily headache. It is classified as a headache attributed to a substance or its withdrawal.

**96.** (c) Kayser-Fleisher rings in the cornea

This clinical picture points strongly to Wilson's disease. This is an autosomal recessive disorder of copper metabolism, leading to copper accumulation in the liver and brain. The recurrent jaundice suggests chronic liver disease (cirrhosis) starting from a young age. The "facial grimacing" is a key symptom of the neuropsychiatric involvement; copper deposition in the basal ganglia causes movement disorders like dystonia (which includes grimacing), tremor, and parkinsonism. A pathognomonic clinical clue for Wilson's disease is the Kayser-Fleisher (K-F) ring. This is a golden-brown ring of copper deposits in Descemet's membrane at the limbus (the periphery) of the cornea. It is best seen on a slit-lamp examination. Adenoma sebaceum (a) (facial angiofibromas) are seen in Tuberous Sclerosis. Erythema nodosum (b) is a skin inflammation seen in many conditions (e.g., sarcoidosis, IBD). Osler's nodes (d) are painful nodules seen in infective endocarditis.

**97.** (d) II, III and IV

Secondary (or acquired) immunodeficiency is the loss of immune function as a result of an external factor, disease, or condition, as opposed to a primary (congenital) genetic defect.

1. Diphenylhydantoin (Phenytoin): This anti-seizure medication is a known cause of secondary immunodeficiency, but it typically causes a very specific defect: selective IgA deficiency. While a valid cause, it's a more specific iatrogenic (drug-induced) cause.
2. Severe malnutrition: This is the most common cause of secondary immunodeficiency worldwide. Protein-energy malnutrition severely impairs the immune system, especially cell-mediated immunity (T-cells), complement function, and antibody production.
3. Post-varicella state: Many viral infections, including varicella (chickenpox) and measles, are well-known to cause a transient but significant period of immunosuppression (anergy), particularly by affecting T-cell function. This leaves

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the child vulnerable to secondary bacterial infections.

4. Nephrotic syndrome: This kidney disorder is a classic cause of secondary immunodeficiency. The massive loss of protein in the urine (proteinuria) includes the loss of immunoglobulins (antibodies) and complement factors, leading to a state of acquired hypogammaglobulinemia and a high risk of severe bacterial infections.

The question groups three causes. The most significant and broad categories of causes listed are severe malnutrition (nutritional), post-varicella state (infectious), and nephrotic syndrome (systemic disease with protein loss). The drug-induced cause (I), while valid, is more specific and iatrogenic, making (II, III, and IV) the best grouping of major, non-iatrogenic causes.

**98.** (c) II and III

Let's analyze the statements on vaccine administration.

1. Statement I is incorrect. In older children and adults, the deltoid muscle is the preferred site for IM injections like Hepatitis B, as it provides a good immunogenic response. In infants and young toddlers, the anterolateral thigh (vastus lateralis) is preferred due to its larger muscle mass. Giving it in the gluteal region is what's associated with reduced efficacy due to injection into fat.
2. Statement II is correct. If multiple vaccines must be given in the same limb (e.g., in an infant), they should be administered into the same muscle (e.g., vastus lateralis) but must be separated by at least 1 inch (2.5 cm). This prevents the vaccine components from mixing and allows for monitoring of local reactions.
3. Statement III is correct. When a vaccine (active immunization) and an immunoglobulin (passive immunization, e.g., Hepatitis B vaccine and HBIG) are given simultaneously, they must be administered at separate anatomical sites (e.g., different limbs). Giving them at the same site could lead to the immunoglobulin neutralizing the vaccine antigen, thus preventing an active immune response.
4. Statement IV is incorrect. While giving two IM vaccines in separate limbs is an option, it is not a requirement. As per statement II, they can be given in the same limb (same thigh) as long as they are separated by 1 inch.

Therefore, the correct statements are II and III.

**99.** (d) Chloral hydrate

A plain abdominal X-ray is sometimes useful in toxicology to identify an ingested substance. Most pills and liquids are radiolucent (they don't show up), but substances that are radiopaque (white on X-ray) typically contain elements with a high atomic number that absorb X-rays.

1. (d) Chloral hydrate: This is the classic example of a non-metallic organic compound that is radiopaque. It is a halogenated hydrocarbon ($C_2H_3Cl_3O_2$), and the three chlorine atoms give it a high density, causing it to be visible on an X-ray.
2. (a), (b), (c): Phenazopyridine, ethylene glycol, and chloroquine are organic molecules composed primarily of carbon, hydrogen, oxygen, and nitrogen. These elements have low atomic numbers similar to soft tissue and are therefore radiolucent.

A common mnemonic for radiopaque ingestions is CHIPES:

i. C = Chloral hydrate, Calcium, Cocaine (body packs)
ii. H = Heavy metals (Lead, Mercury, Arsenic, Bismuth)
iii. I = Iron, Iodide
iv. P = Phenothiazines (a class of antipsychotics)
v. E = Enteric-coated tablets
vi. S = Salicylates (only in massive concretion/bezoar formation)

**100.** (b) II and III

Genomic imprinting is an epigenetic phenomenon where a gene is expressed in a parent-of-origin-specific manner. This means that for a small subset of genes, only one copy (either the one from the mother or the one from the father) is active, while the other copy is silenced (imprinted).

Prader-Willi syndrome (II) and Angelman syndrome (III) are the classic textbook examples of disorders caused by imprinting. Both are

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caused by a deletion or defect in the same specific region of chromosome 15 (15q11-q13).
In Prader-Willi syndrome, the defective or deleted chromosome 15 is inherited from the father. The maternal copy of this region is normally imprinted (silenced), so the individual is left with no active copies of the critical PWS genes.
In Angelman syndrome, the defective or deleted chromosome 15 is inherited from the mother. The paternal copy of the UBE3A gene (in this region) is normally imprinted, so the individual is left with no active copy.
Rubinstein-Taybi syndrome (I) is an autosomal dominant condition caused by mutations in the CREBBP or EP300 genes. Edward syndrome (IV) is a chromosomal aneuploidy (Trisomy 18). Neither is a disorder of imprinting.

**101.** (d) II and IV

The POCSO Act, 2012, in Sections 5 and 9, defines specific circumstances that make sexual offenses "aggravated." These factors are primarily based on the extreme vulnerability of the child or a severe breach of trust by the perpetrator. Statement (II) is correct; Section 9(b) explicitly lists the child being "mentally or physically disabled" as an aggravating circumstance. Statement (IV) is also correct; Section 9(d) identifies an offense committed by "a member of the family of the child" as aggravated, representing a profound breach of trust. This combination highlights both victim vulnerability and a severe breach of trust. Statement (III) (staff of an educational institution) is also a valid aggravating factor listed in Section 9(f), representing a breach of trust. Statement (I) is less precise; the Act specifies "grievous bodily harm" (Section 5(b)) or "endangering the life" of the child, which is a higher threshold than just "physical violence," as assault is inherently violent. Given the paired options, (II) and (IV) are two of the most clear-cut and commonly cited aggravating factors.

**102.** (b) I, III and IV

The IMNCI guidelines provide specific feeding recommendations for different age groups. For a child aged 12-24 months (like this 14-month-old), three core principles apply. Statement (I) is correct: Breastfeeding remains a crucial source of nutrition and immunity and should be continued on demand ("as often as the child wants"). Statement (III) is correct: At this age, the child should be transitioning to family foods. It is recommended to offer food from the family pot, which has been appropriately modified (e.g., chopped, mashed) to be safe and easy for the child to eat. Statement (IV) is also correct: The recommended frequency for complementary feeding at this age is 3 to 4 meals each day, supplemented with 1-2 nutritious snacks as the child's appetite dictates, in addition to continued breastfeeding. Statement (II), while describing a form of "responsive feeding," is a very specific instruction on how to feed, whereas I, III, and IV are the fundamental IMNCI guidelines on what and how often to feed this age group.

**103.** (c) III and IV

The IMNCI guidelines for a child aged 2 months to 5 years use a "traffic light" system. The "pink box" classification is "Severe Pneumonia or Very Severe Disease," which requires urgent referral. This diagnosis is made if the child has any General Danger Sign OR chest indrawing (IV) OR stridor in a calm child (III). The General Danger Signs include being unable to drink, convulsing, being lethargic/unconscious, or vomiting everything (II). The "yellow box" classification is "Pneumonia," which is diagnosed by the presence of fast breathing (I) (for a 4-year-old, this is $\geq$ 40 breaths/min). Therefore, statements II, III, and IV are all criteria for the severe "pink box" classification. Statement (I) is a criterion for the (non-severe) "yellow box." Since the options are pairs, the combination of (c) III and IV (Stridor and Chest indrawing) correctly lists the two specific respiratory signs that define severe pneumonia. Options (b) and (d) are also technically correct pairs from the "pink box," but (c) pairs the two respiratory severity signs.

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**104.** (c) Tender swelling behind the ear

In the IMNCI guidelines for assessing a child with an ear problem, the primary goal is to identify life-threatening complications that require immediate hospitalization. The most

significant of these is mastoiditis, a bacterial infection of the mastoid bone. The cardinal clinical sign of mastoiditis is a tender swelling behind the ear (c). This finding places the child in the "pink" classification and requires urgent referral for parenteral antibiotics and potential surgical consultation. In contrast, pus draining from the ear is classified based on duration, not as an immediate emergency. Discharge for < 14 days (a) is "Acute Ear Infection," and discharge for ≥ 14 days (b) is "Chronic Ear Infection." Both are "yellow" classifications managed with antibiotics (oral for acute, topical for chronic) as an outpatient, assuming no danger signs or mastoiditis are present. The number of ears involved (d) does not change this basic management.

**105.** (a) I and II

While most cases of Autism Spectrum Disorder (ASD) are idiopathic, a significant minority are associated with specific genetic syndromes. Fragile X syndrome (II) is the most common monogenic cause of both ASD and inherited intellectual disability, resulting from a repeat expansion in the FMR1 gene. Tuberous sclerosis complex (I), an autosomal dominant neurocutaneous disorder, also has a very high co-occurrence with ASD, with studies showing 25-50% of individuals with TSC also meet the diagnostic criteria for ASD. These two (I and II) are the strongest and most well-established associations on the list. Prader-Willi syndrome (III) has a complex behavioral phenotype that can include obsessive-compulsive behaviors, but its association with a classic ASD diagnosis is less common. Patau syndrome (IV) (Trisomy 13) is a severe chromosomal aneuploidy with major structural malformations and a very short life expectancy; it is not a recognized cause of ASD.

**106.** (b) I, II and IV

Cerebral palsy (CP) is defined by a specific set of criteria. It is a group of disorders that primarily affect movement (I) and posture (IV), leading to activity limitations. These disorders are permanent (II), meaning they are not transient and will last throughout the individual's life. A critical part of the definition is that these motor impairments are due to a non-progressive disturbance that occurred in the developing fetal or infant brain. Therefore, the statement that CP has a progressive course (III) is incorrect. This is a key feature that distinguishes CP from neurodegenerative disorders. While the symptoms of CP (like muscle contractures or joint deformities) may change or worsen over time, the underlying brain injury itself does not get worse. Thus, the correct characteristic features are I, II, and IV.

**107.** (d) I and IV

This question asks for tools used in the classification of spasticity or in a child with spastic CP. The Modified Ashworth Scale (IV) is the most direct answer; it is the most widely used clinical scale specifically designed to grade or "classify" the severity of spasticity (increased muscle tone) by assessing resistance to passive movement. The Gross Motor Function Classification System (GMFCS) (I) is also a fundamental tool in cerebral palsy. It does not classify spasticity itself, but rather classifies the child's overall functional mobility (e.g., from Level I, walking independently, to Level V, fully dependent for mobility). This functional level is largely a consequence of the child's spasticity and motor control. The Medical Research Council (MRC) System (II) is used to grade muscle power/strength, not spasticity. The Modified Connors Scale (III) is a questionnaire for diagnosing ADHD. Therefore, in the comprehensive assessment and classification of a child with spastic CP, both the GMFCS and the Modified Ashworth Scale are essential tools.

**108.** (b) II and III

The primary medications used to treat Attention Deficit Hyperactivity Disorder (ADHD) fall into two main categories: stimulants and non-stimulants. Methylphenidate (II) (e.g., Ritalin, Concerta) is a central nervous system stimulant and is the most common, first-line medication for ADHD. It is highly effective at improving focus and reducing hyperactivity. Atomoxetine (III) (e.g., Strattera) is the leading non-stimulant medication approved for ADHD. It is a selective

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## STAY ONE STEP AHEAD.

norepinephrine reuptake inhibitor (SNRI) and is a valuable alternative for children who cannot take stimulants. In contrast, Carbamazepine (I) is an anticonvulsant and mood stabilizer. Clonazepam (IV) is a benzodiazepine used for anxiety, seizures, or panic disorder. Neither is a standard treatment for the core symptoms of ADHD. Therefore, the correct medications listed are Methylphenidate and Atomoxetine.

**109.** (d) II, III and IV

The Rashtriya Bal Swasthya Karyakram (RBSK) program screens children for the "4 D's": Defects at birth, Deficiencies, Diseases, and Developmental delays. The category of "Deficiencies" specifically targets conditions arising from nutritional or micronutrient inadequacies. The conditions explicitly listed under this category include: Vitamin A deficiency (II) (manifesting as Bitot's spots), Anemia (III) (severe anemia), and Vitamin D deficiency (IV) (manifesting as rickets). This category also includes Iodine Deficiency Disorders and Severe Acute Malnutrition. Congenital Hypothyroidism (I) is a critical condition that is also screened for under RBSK, but it is classified under the "Diseases" category (as an endocrine disorder), not as a nutritional deficiency. Therefore, the correct items from the "Deficiencies" list are II, III, and IV.

**110.** (d) III and IV

The management of hyperkalemia is a multi-step process. Statement (III) is correct: A combination of intravenous regular insulin and glucose is a first-line therapy. Insulin activates the Na+/K+-ATPase pump, which enhances the cellular uptake of potassium, shifting it from the blood into the cells. Statement (IV) is also correct: Sodium polystyrene sulfonate (a cation-exchange resin) works in the colon to bind potassium in exchange for sodium. This bound potassium is then excreted in the feces, thus enhancing total body potassium elimination. Statement (I) is incorrect: Intravenous calcium does not affect potassium levels; its critical role is to stabilize the myocardial cell membrane to protect against fatal arrhythmias. Statement (II) is incorrect: Beta-adrenergic agonists (like salbutamol) work similarly to insulin; they enhance cellular uptake of potassium, they do not stabilize the myocardial membrane.

**111.** (b) III and IV

Let's evaluate the statements on the oral rotavirus vaccine. Statement (III) is correct: A past history of intussusception is the primary absolute contraindication for the rotavirus vaccine. This is because the vaccine itself carries a very small (approximately 1-2 per 100,000) risk of causing intussusception, and this risk is considered unacceptable in a child who has already had the condition. Statement (IV) is correct: Mild illness, including ongoing diarrhoea or gastroenteritis, is not a contraindication. The vaccine should be given on schedule to avoid missed opportunities. Statement (I) is correct in that the vaccine is stored at +2 to +8°C, but it is also heat-sensitive, and some rotavirus vaccines (like Rotavac) have a vaccine vial monitor (VVM). Statement (II) is incorrect; reconstituted vaccines (like Rotavac) should be used promptly, typically within 4-6 hours, not 2 hours. Furthermore, liquid multi-dose vials (like Rotasiil) may be kept for up to 28 days under the open-vial policy. Given the options, (III) and (IV) are both clear, correct, and clinically important guidelines.

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**112.** (c) 18 months

The constellation of milestones described is classic for an 18-month-old child.

1. Fine Motor: A child learns to build a tower of 2 blocks at 15 months and progresses to a tower of 3-4 blocks at 18 months.
2. Gross Motor: A child walks well at 15 months and begins to run (often stiffly) at 18 months.
3. Social/Adaptive: Domestic mimicry, such as "helping" with household chores like sweeping, is a hallmark 18-month skill.
4. Language: Vocabulary expands from 3-5 words at 15 months to about 8-10 (or more) words at 18 months.

These skills are too advanced for a 15-month-old and not as advanced as a 24-month-old (who can build a 6-7 block tower and speak in 2-word sentences).

**113.** (b) 3 years

These milestones are all characteristic of a 3-year-old child.

1. Gross Motor: The ability to pedal and ride a tricycle is a key gross motor skill that emerges at 3 years.
2. Fine Motor/Vision: Drawing skills follow a typical progression: copying a vertical line at 2 years, copying a circle at 3 years, and copying a cross or square at 4 years.
3. Language/Social: By age 3, a child's sense of self is developed to the point where they can confidently state their own name and gender. They also typically speak in 3-word sentences.

A 2-year-old would be running and drawing lines, while a 4-year-old would be hopping on one foot and drawing a cross.

**114.** (d) I and IV

Assuming "teen boy" is a typo for "term boy," this question describes the routine care of a healthy neonate (birth weight 2.8 kg). Statement (I) is correct: Initiating breastfeeding within the first hour of life ("golden hour") is a cornerstone of newborn care, promoting bonding, colostrum intake, and successful lactation. Statement (IV) is also correct: A thorough head-to-toe physical examination is mandatory for every newborn to screen for any congenital malformations, birth injuries, or signs of illness. Statement (II) is incorrect: The standard of care is "rooming-in," where the baby stays with the mother to facilitate bonding and on-demand feeding, not in a separate area. Statement (III) is incorrect: The standard dose of intramuscular vitamin K for a term infant (weighing $> 1$ kg) is 1.0 mg. The 0.5 mg dose is reserved for preterm infants weighing $\leq 1$ kg.

**115.** (d) Topiramate

Super-refractory status epilepticus (SRSE) is a life-threatening state where seizures persist or recur $\geq 24$ hours after the initiation of continuous anesthetic infusions (e.g., midazolam, propofol). Management involves adding multiple non-anesthetic antiepileptic drugs (AEDs) to achieve burst suppression and allow the anesthetic to be weaned. Topiramate is a broad-spectrum AED that is a common choice in this setting. It can be administered as a slurry via a nasogastric tube, and a loading dose can be given for a rapid effect. Its multiple mechanisms of action (e.g., Na+ channel blockade, GABA-A modulation, AMPA/kainate antagonism) are advantageous when other agents have failed. Lamotrigine (c) is not used in this acute setting as it requires a very slow titration over weeks due to the risk of Stevens-Johnson syndrome. Oral benzodiazepines like Clobazam (b) or Clonazepam (a) are not the primary agents used to break SRSE.

**116.** (b) I and IV

This question addresses the emergent, first-line (0-5 minute) management of status epilepticus (SE). Statement (I) is correct: The standard protocol is to administer a single bolus of a benzodiazepine (e.g., IV lorazepam, IV diazepam, or IM midazolam). If seizures persist after 5 minutes, a second dose of the benzodiazepine can and should be given. This directly proves that Statement (II) is incorrect. Statement (IV) is correct: The recommended intravenous bolus dose for lorazepam is 0.1 mg/kg. The intravenous bolus dose for midazolam is 0.1-0.2 mg/kg. Therefore, 0.1 mg/kg is a correct and standard dose for both in this context. Statement (III) is incorrect: A dose of 1-15 μg/kg/min is a continuous infusion rate. This is a third-line therapy used for refractory SE, not the initial management.

**117.** (a) I, III and IV

Hypernatremia is caused by a net loss of free water or a net gain of sodium. Statement (I) is correct: Central Diabetes Insipidus is a deficiency of ADH, leading to the kidney's inability to concentrate urine. This results in massive free water loss, which causes hypernatremia if water intake is inadequate. Statement (III) is correct: Giving an infant boiled skimmed milk or improperly concentrated formula provides a high renal solute load (sodium, protein). The infant's kidneys must excrete this solute, which causes an osmotic diuresis, leading to significant free water loss and hypernatremic dehydration. Statement (IV) is correct: Lactulose is an osmotic laxative. It draws large volumes of water into the stool, causing osmotic diarrhea. This large

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loss of free water can lead to dehydration and hypernatremia. Statement (II) is incorrect: Addison disease (primary adrenal insufficiency) causes a deficiency of aldosterone, which leads to renal salt (sodium) wasting and subsequent hyponatremia.

**118.** (c) III and IV

This question pertains to the management of acute variceal bleeding. Statement (III) is correct: Endoscopic therapies, which include Endoscopic Sclerotherapy (EST) and endoscopic variceal ligation (EVL), are the first-line treatments. These interventions are highly effective and can successfully control the acute bleeding episode in 80-90% of cases. Statement (IV) is also correct: After a child survives an acute variceal bleed, the risk of rebleeding is very high. Therefore, it is mandatory to initiate secondary prophylaxis to prevent recurrence. This typically involves a combination of non-selective beta-blockers (e.g., propranolol) and a program of serial endoscopic band ligation. Statement (I) is incorrect: Vasoactive drugs like octreotide are given for 3-5 days, not 7 days. Statement (II) is incorrect; it confuses two different procedures. EST involves injecting a sclerosant (like ethanolamine oleate). The injection of N-butyl-2-cyanoacrylate (glue) is a different technique called variceal obturation, typically used for gastric varices.

**119.** (b) I, II and IV

Endotracheal intubation (ETI) offers numerous advantages over bag-mask ventilation by providing a secure, definitive airway. Statement (I) is correct: Once a child is intubated and connected to a mechanical ventilator, operators can precisely set and control parameters like inspiratory time, respiratory rate, and volume. Statement (II) is correct: ETI is necessary for the effective delivery of Positive End-Expiratory Pressure (PEEP), which is crucial for stenting open collapsed alveoli and improving oxygenation in lung diseases. Statement (IV) is correct: A cuffed endotracheal tube seals the trachea, providing definitive protection of the airway and reducing the risk of aspiration of gastric contents, a common and dangerous complication during resuscitation. Statement (III) is incorrect: "Peak expiratory pressure" is not a standard controlled variable. Ventilators are set to control peak inspiratory pressure (PIP) or volume, and positive end-expiratory pressure (PEEP).

**120.** (d) I and IV

Hypocalcemia (low serum calcium) is a common pediatric electrolyte abnormality with several causes. Statement (I) is correct: Hypomagnesemia is a critical cause. Magnesium is essential for both the secretion of parathyroid hormone (PTH) and for PTH to act on its target tissues. Severe magnesium deficiency leads to functional hypoparathyroidism and PTH resistance, causing hypocalcemia. Statement (IV) is correct: Pseudohypoparathyroidism is a genetic disorder where the kidneys and bone are resistant to the effects of PTH. Even though PTH levels are high, the body cannot respond appropriately, leading to hypocalcemia and hyperphosphatemia. Statement (II) is incorrect: Hyperphosphatemia (e.g., in renal failure or tumor lysis syndrome) causes hypocalcemia by binding calcium. Hypophosphatemia would tend to increase serum calcium. Statement (III) is incorrect: Metabolic alkalosis (not acidosis) causes symptomatic hypocalcemia by increasing the binding of calcium to albumin, which lowers the ionized (active) fraction. Acidosis does the opposite, increasing ionized calcium.

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END

# QUESTION PAPER 2024

1. The height of the Jugular Venous Pulse is determined by :
   (a) Right atrial pressure
   (b) Right ventricle pressure
   (c) Left atrial pressure
   (d) Left ventricle pressure

2. The SA node is situated at the junction of :
   (a) SVC and RA
   (b) SVC and LA
   (c) LA and LV
   (d) IVC and RA

3. High output cardiac failure is caused by which of the following diseases ?
   1. Beri-beri
   2. Severe anaemia
   3. Thyrotoxicosis

   Select the correct answer using the code given below
   (a) 1 and 2 only
   (b) 2 and 3 only
   (c) 1 and 3 only
   (d) 1, 2 and 3

4. Reverse splitting of second heart sound is most commonly seen in :
   (a) ASD
   (b) Severe MR
   (c) LBBB
   (d) Pulmonary hypertension

5. Which of the following are major criteria under the Jones Criteria for Acute Rheumatic Fever ?
   1. Chorea
   2. Erythema Marginatum
   3. Subcutaneous Nodules
   4. Polyarthralgia

   Select the correct answer using the code given below
   (a) 1, 2 and 3
   (b) 1, 2 and 4
   (c) 1, 3 and 4
   (d) 2, 3 and 4

6. A 70-year-old man with dyspnoea on exertion has been found to have a single second heart sound and a loud diamond-shaped, rough quality systolic murmur best heard at the right 2nd intercostal space, radiating to the right carotid artery. Which one of the following is the likely diagnosis ?
   (a) Patent ductus arteriosus
   (b) Ventricular septal defect
   (c) Aortic stenosis
   (d) Pulmonary stenosis

7. Which one of the following is the appropriate scoring system used to assess the risk of stroke in patients of non-valvular chronic atrial fibrillation on oral anticoagulation ?
   (a) HAS-BLED
   (b) AMT-4
   (c) CURB-65
   (d) $CHA_2DS_2$-VASc

8. Consider the following statements with regard to pulmonary embolism :
   1. Unexplained breathlessness is the most common symptom.
   2. When congestive heart failure or pneumonia fail to improve despite standard medical treatment, occult pulmonary embolism should be considered.
   3. Patients with high clinical likelihood of venous thromboembolism should first undergo D-dimer testing alone without obligatory imaging tests.

   Which of the statements given above are correct ?
   (a) 1 and 2 only
   (b) 2 and 3 only
   (c) 1 and 3 only
   (d) 1, 2 and 3

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**9.** Consider the following criteria :
1. Pleural fluid protein : Serum protein ratio 0·5
2. Pleural fluid LDH : Serum LDH ratio 0·6
3. Pleural fluid LDH Two-thirds of the upper limit of normal serum LDH

Which of the above criteria, if present in pleural fluid, will indicate an exudate ?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**10.** Which of the following statements are correct with regard to clubbing ?
1. It usually affects the fingers symmetrically.
2. It does not involve the toes.
3. It may be associated with malignant lung conditions.
4. It may recede following the lung transplantation in cystic fibrosis.

Select the answer using the code given below :
(a) 1, 2 and 3
(b) 1, 3 and 4
(c) 2, 3 and 4
(d) 1, 2 and 4

**11.** Consider the following statements regarding Löfgren syndrome :
1. It is an acute illness and is more commonly seen in females.
2. It is a clinically distinct phenotype of sarcoidosis characterized by peripheral arthropathy and uveitis.
3. Clinical features include fever, erythema, nodosum and bilateral lymphadenopathy.

Which of the statements given above are correct ?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**12.** Which of the following investigations may be used for the diagnosis of pulmonary tuberculosis ?
1. Nucleic acid amplification
2. Culture in Middlebrook medium
3. Light emitting diode fluorescent microscopy with auramine staining
4. Peripheral blood smear

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**13.** The distance walked in 6 minutes is an indirect measure of which of the following variables of the 'BODE Index' which is used to assess the prognosis in chronic obstructive pulmonary disease ?
(a) Body Mass Index
(b) Degree of air flow obstruction
(c) Severity of dyspnoea
(d) Exercise capacity

**14.** A 65-year-old female, a stone-cutter by occupation had multiple well circumscribed nodular opacities in upper and middle zones of a chest X-ray along with mediastinal lymph nodes showing egg-shell calcification. Which one of the following is the most likely etiology ?
(a) Byssinosis
(b) Silicosis
(c) Berylliosis
(d) Siderosis

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**15.** Which of the following are complications of acute pancreatitis ?
1. Hypoxia
2. Hypercalcemia
3. Hyperglycemia
4. Reduced serum albumin

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 3 and 4
(c) 2 and 3 only
(d) 3 and 4 only

**16.** The Gold Standard for diagnosis of Celiac disease is :
(a) Endoscopic small bowel biopsy
(b) Stool routine microscopy and culture

(c) Abdominal ultrasound
(d) Anti-parietal cell antibodies

**17.** With regard to Helicobacter pylori eradication in peptic ulcer disease, consider the following statements :
1. Proton-pump inhibitor is taken with two antibiotics.
2. Treatment is prescribed for at least 7 days.
3. Treatment of Helicobacter pylori infection leads to vitamin B12 deficiency.
4. Patients requiring long-term NSAIDs should undergo Helicobacter pylori eradication therapy to reduce ulcer risk.

Which of the statements given above are correct ?
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**18.** Which of the following are precipitating factors for hepatic encephalopathy ?
1. Hypokalemia
2. Septicemia
3. Increased dietary protein load

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**19.** Which one of the following statements is correct regarding Upper Gastro-Intestinal Bleeding (UGIB)?
(a) Esophageal varices are the most common cause.
(b) Eradication of Helicobacter pylori in patients with bleeding ulcers decreases the rebleeding rates to less than 5%.
(c) Patients with cardiovascular disease who are on aspirin for secondary prevention should not restart their aspirin.
(d) Transjugular Intrahepatic Portosystemic Shunt (TIPS) should be considered as therapy only after one week of hospitalization for acute variceal bleeding.

**20.** Crigler-Najjar syndrome Type-I is inherited as an :
(a) Autosomal recessive disorder
(b) Autosomal dominant disorder
(c) X-linked recessive disorder
(d) X-linked dominant disorder

**21.** Whipple's disease is characterized by the infiltration of small intestinal mucosa by 'foamy' macrophages. Which one of the following histological stains is characteristically used to stain them ?
(a) Sudan Black-B
(b) Gentian violet
(c) Methylene blue
(d) Periodic acid Schiff

**22.** Poorly absorbed antibiotics are often used as adjunctive therapies in patients with hepatic encephalopathy. These may include :
(a) Tenofovir or Telbivudine
(b) Sofosbuvir or Velpatasur
(c) Levofloxacin or Clarithromycin
(d) Neomycin or Rifaximin

**23.** When the serum ascites to albumin gradient (SAAG) is less than 1.1 gm/dL, then which of the following causes of ascites may be considered ?
1. Infection
2. Malignancy
3. Cardiac ascites
4. Portal hypertension

Select the correct answer using the code given below:
(a) 1, 3 and 4
(b) 1 and 2 only
(c) 3 and 4 only
(d) 1, 2 and 3

**24.** A sigmoid configuration along with tapering beak-like deformity at the lower esophageal sphincter on barium swallow is a feature of :
(a) Diffuse esophageal spasm
(b) Squamous cell carcinoma of esophagus
(c) Achalasia cardia
(d) Barret's esophagus

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**25.** Consider the following findings in urine examination of suspected haematuria :

| Dipstick test is positive for following component | Urine microscopy | Etiology |
|---|---|---|
| A: Myoglobinuria | D: White blood cells | G: Glomerular bleeding |
| B: Hematuria | E: No red cells | H: Intravascular hemolysis |
| C: Hemoglobinuria | F: Red cell casts | I: Rhabdomyolysis |

Which one of the following triplets is correctly matched ?
(a) B, F, G
(b) A, D, I
(c) B, E, H
(d) C, F, H

**26.** Which of the following statements are correct regarding anti-glomerular basement membrane disease ?
1. It is a rare autoimmune disease which presents as rapidly progressive glomerulonephritis.
2. Antibodies are formed against α3 chain of type 4 collagen GBM.
3. The α3 chain is expressed in basement membrane of glomerulus and the retina.
4. The disease may be associated with retinal hemorrhage when it is known as Goodpasture syndrome.

Select the answer using the code given below :
(a) 1 and 2 only
(b) 2, 3 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

**27.** Which of the following are poor prognostic indicators in glomerular disease ?
1. Female sex
2. Hypertension
3. Persistent and severe proteinuria
4. Elevated creatinine levels at presentation

Select the correct answer using the code given below:
(a) 1 and 3 only
(b) 2 and 4 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

**28.** Which of the following are indications for a renal biopsy ?
1. Chronic kidney disease of uncertain etiology
2. Nephritic syndrome
3. Uncontrolled severe hypertension
4. Renal transplant dysfunction

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**29.** Which of the following is the correct range of Glomerular Filtration Rate (GFR) for Stage 2 chronic kidney disease ?
(a) 60 – 89 mL/min/1.73 $m^2$
(b) 45 – 59 mL/min/1.73 $m^2$
(c) 30 – 44 mL/min/1.73 $m^2$
(d) 15 – 29 mL/min/1.73 $m^2$

**30.** A diagnosis of polycystic ovary syndrome requires the presence of which of the following clinical features ?
1. Menstrual irregularity
2. Clinical or biochemical androgen excess
3. Multiple cysts in the ovaries
4. BMI $< 18{\cdot}5$ kg/$m^2$

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

**31.** A young male presented with recent onset urethral discharge and dysuria. On examination, the discharge was profuse and purulent. Microscopy of smears from the discharge revealed Gram-negative diplococci. What is the likely diagnosis ?
(a) Genital herpes
(b) Chlamydia
(c) Gonorrhoea

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(d) Syphilis

**32.** A 40-year-old female with nephritic range proteinuria is found to have low serum complement levels. Which of the following can be the likely etiology?
1. Systemic lupus erythematosus
2. Post-infectious glomerulonephritis
3. Infective endocarditis
4. Mesangio-capillary glomerulonephritis

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 3 and 4 only
(c) 1, 2 and 3
(d) 1, 2, 3 and 4

**33.** Consider the following clinical features:
1. Hypomimia
2. Dysphonia
3. Festination gait
4. Cogwheel rigidity

Which of the features given above are generally present in Parkinsonism?
(a) 1, 2, 3 and 4
(b) 1, 2 and 4 only
(c) 3 and 4 only
(d) 1, 2 and 3 only

**34.** Circuits between the basal ganglia and the motor cortex constitute the extra pyramidal system which controls muscle tone, body posture and the initiation of movement. Lesions of the extra pyramidal system present clinically with:
(a) Tremor and rigidity
(b) Seizures
(c) Urinary incontinence
(d) Muscle wasting

**35.** Consider the following statements regarding Transient Global Amnesia (TGA):
1. TGA mainly affects middle aged persons who present with abrupt, discrete loss of anterograde memory lasting for few hours.
2. During the episode, the patients are unable to record new memories resulting in repetitive questioning.
3. Consciousness is impaired during the episode and the patient is unable to perform even simple motor functions.
4. After 4 – 6 hours, memory function and behaviour return to normal but the patient has complete and persistent amnesia for the duration of the episode.

Which of the statements given above are correct?
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

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**36.** Contralateral homonymous lower quadrantanopia is the type of visual loss seen when the lesion is located at which one of the following anatomical locations?
(a) Frontal lobe
(b) Temporal lobe
(c) Parietal lobe
(d) Occipital lobe

**37.** Which of the following correctly describes the primary position of the right eye in right 3rd cranial nerve palsy?
(a) Downwards and outwards
(b) Downwards and inwards
(c) Upwards and outwards
(d) Upwards and inwards

**38.** Consider the following statements regarding cluster headache:
1. The headaches are periodic, beginning at the same time for weeks at a stretch.
2. Patients experience severe, unilateral periorbital pain which typically lasts from 30 – 90 minutes.
3. The headache is accompanied with autonomic features such as ipsilateral tearing, nasal congestion and conjunctival injection.
4. Subcutaneous injection of Sumatriptan or inhalation of 100% oxygen may be beneficial in halting acute attacks.

Which of the statements given above are correct?
(a) 3 and 4 only
(b) 1 and 2 only
(c) 1, 2 and 3
(d) 1, 2, 3 and 4

**39.** A 22-year-old lady presented with complaint of chronic daily headache. She has prior history of migraine but increasingly unrelieved with analgesics. She has history of using Sumatriptan almost daily since the last three weeks. What is the most likely diagnosis?
(a) Sub-arachnoid hemorrhage
(b) Cluster headache
(c) Medication overuse headache
(d) Trigeminal neuralgia

**40.** Consider the following with regard to trigger factors for seizures:
1. Flickering lights
2. Recreational drug misuse
3. Non-compliance to treatment with antiepileptic drugs
4. Sleep deprivation

Which of the factors given above are correct?
(a) 1 and 2 only
(b) 1, 2, 3 and 4
(c) 2 and 3 only
(d) 3 and 4 only

**41.** A 75-year-old man presented with temporal headache, jaw pain, exacerbated by chewing and talking. Which one of the following investigations will most likely help in diagnosis?
(a) Temporal artery biopsy
(b) Electromyography
(c) MRI of the brain
(d) Carotid colour Doppler

**42.** The Rai staging system and Binet staging system are the two widely used staging systems used for staging which of the following hematological malignancies?
(a) Acute Myeloid Leukemia
(b) Chronic Myeloid Leukemia
(c) Acute Lymphoid Leukemia
(d) Chronic Lymphocytic Leukemia

**43.** Patients suffering from which of the following conditions commonly present for several years in the dermatology OPD with eczematous or dermatitis skin lesions before being finally diagnosed with a T-cell lymphoma?
(a) Mycosis fungoides
(b) Psoriasis
(c) Acne vulgaris
(d) Onychomycosis

**44.** Which of the following is an oral anticoagulant?
(a) Dabigatran
(b) Heparin
(c) Fondaparinux
(d) Bivalirudin

**45.** A 39-year-old female presents with severe autoimmune hemolytic anemia. Which of the following should be the initial step in its management?
(a) Prednisolone
(b) Rituximab
(c) Emergency splenectomy
(d) Plasmapheresis

**46.** Which one of the following is a cause of Secondary Hyperaldosteronism?
(a) Adrenal adenoma secreting aldosterone
(b) Idiopathic bilateral adrenal hyperplasia
(c) 11-deoxycorticosterone secreting adrenal tumour
(d) Inadequate renal perfusion due to renal artery stenosis

**47.** Which one of the following diseases is characterized by destructive lymphoid infiltration of the thyroid gland leading to fibrosis and enlargement of the thyroid gland with an increased risk of developing thyroid lymphoma?
(a) de Quervain's Thyroiditis
(b) Multinodular Goitre
(c) Riedel's thyroiditis
(d) Hashimoto's thyroiditis

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**48.** A 52-year-old male diabetic presents with recurrent episodes of hypoglycemia. On examination, Pulse : 84 beats/minute, BP : 160/100 mm Hg, Chest and CVS examination unremarkable. Which of the following antihypertensive should be avoided in this patient?
(a) Propranolol
(b) Telmisartan
(c) Torsemide
(d) Amlodipine

**49.** Which of the following are correct regarding Cortisol?
1. Levels are highest in the morning on waking.
2. Cortisol falls dramatically during an illness.
3. More than 95% circulating cortisol is protein bound.
4. It is the major glucocorticoid in humans and can also activate mineralocorticoid receptors.

Select the answer using the code given below :
(a) 1, 3 and 4
(b) 2, 3 and 4
(c) 1 and 3 only
(d) 1 and 2 only

**50.** A patient presents with history of 'bones, stones and abdominal groans' — due to generalised aches and pains and renal calculus colic. Which is the most discriminatory blood investigation?
(a) Parathyroid hormone assay
(b) Thyroid function tests (free T3, free T4, TSH)
(c) Cortisol levels
(d) Insulin and C-peptide levels

**51.** With regards to treatment of thyrotoxicosis of Grave's disease, consider the following statements :
1. Propylthiouracil is suitable in breastfeeding patients.
2. Large goitre is an indication for thyroidectomy.
3. Radioiodine is recommended for management in pregnancy.
4. Agranulocytosis is a complication associated with carbimazole.

Which of the statements given above are correct ?
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 2 and 4
(d) 1, 3 and 4

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**52.** With regard to management of hypothyroidism, consider the following statements :
1. Treatment is with levothyroxine replacement.
2. It is taken as a single daily dose.
3. Average dose is 1·6 μgm/kg/day.
4. Full dose per weight should be started in those with coronary artery disease.

Which of the statements given above are correct ?
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 2 and 4
(d) 1, 3 and 4

**53.** Which of the following glucose lowering agent can be given as an injectable drug ?
(a) Pioglitazone
(b) Metformin
(c) Sitagliptin
(d) Semaglutide

**54.** Which of the following findings are seen in Diabetic Retinopathy on fundus examination ?
1. Microaneurysm
2. Dot and blot hemorrhage
3. Retinal thickening
4. Neovascularization

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**55.** Which one of the following disorders are caused by enzymatic defects in the heme biosynthesis pathway?
(a) Porphyrias
(b) Myelodysplastic syndrome

(c) Hemophilias
(d) Plasma cell disorders

**56.** Which of the following is an inhibitor of the intestinal mucosal transporter NPC1L1, responsible for the absorption of dietary and biliary cholesterol ?
(a) Atorvastatin
(b) Fenofibrate
(c) Metformin
(d) Ezetimibe

**57.** Which one of the following is the most appropriate initial treatment for management of severe hypercalcemia ?
(a) Intravenous infusion of pamidronate
(b) Oral phosphate supplementation
(c) Intravenous infusion of normal saline
(d) Hemodialysis

**58.** Which of the following are used in calculating the serum osmolality ?
1. Serum sodium
2. Glucose
3. Calcium
4. Blood urea nitrogen
Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**59.** A 'slapped cheek' rash is characteristically seen in which of the following infections ?
(a) Measles
(b) Rubella
(c) Chickenpox
(d) Erythema infectiosum

**60.** Which of the following pharmacological agents can be used for the treatment of visceral Leishmaniasis ?
1. Pentavalent antimonials
2. Amphotericin B
3. Spiramycin
4. Paromomycin
Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**61.** The Sabin-Feldman dye test is an indirect fluorescent antibody test which is used to detect antibodies against which of the following organisms ?
(a) Toxoplasma gondii
(b) Leishmania donovani
(c) Coxiella burnetii
(d) Trypanosoma cruzi

**62.** Cat-scratch disease is caused by infection of which of the following organisms ?
(a) Chlamydia trachomatis
(b) Coxiella burnetii
(c) Trypanosoma cruzi
(d) Bartonella henselae

**63.** Which among the following is the first intermediate host for the parasitic fluke Clonorchis sinensis ?
(a) Dog
(b) Snail
(c) Encysts on vegetation
(d) Sheep

**64.** A calabar swelling, which is a short-lived, inflammatory, oedematous swelling close to a limb joint, is characteristically seen in infection caused by which of the following nematodes ?
(a) Onchocerca volvulus
(b) Mansonella perstans
(c) Loa loa
(d) Brugia malayi

**65.** An ophthalmologist may observe 'Snowflake' deposits on the edges of the cornea, in a patient infected with which of the following filarial worms ?
(a) Brugia malayi
(b) Loa loa
(c) Mansonella perstans

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(d) Onchocerca volvulus

**66.** Which among the following are hepatobiliary flukes (trematodes) ?
1. Clonorchis sinensis
2. Mansonella perstans
3. Fasciola hepatica
4. Opisthorchis felineus

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**67.** Which among the following parasitic helminths is a nematode and has zoonotic transmission ?
(a) Taenia saginata
(b) Trichinella spiralis
(c) Fasciola hepatica
(d) Fasciolopsis buski

**68.** Which of the following are correct with regard to BCG vaccination?
1. It is a live-attenuated vaccine.
2. It is administered by intramuscular injection.
3. It is derived from Mycobacterium bovis.
4. It is highly immunogenic.

Select the answer using the code given below :
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

**69.** Which of the following immunizations are recommended for persons infected with HIV?
1. Hepatitis B vaccine
2. Influenza virus vaccine
3. Pneumococcal vaccine

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**70.** Consider the following statements with regard to Vitamin D deficiency:
1. Vitamin D deficiency is common in northern latitudes.
2. Vitamin D deficiency is more likely to develop in people with dark skin.
3. Exposure to UV light is advisable in patients with Vitamin D deficiency.

Which of the statements given above are correct?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

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**71.** Which one of the following statements is characteristic of Purpura fulminans ?
(a) Non-hemorrhagic bullae usually present over extremities
(b) Present as large ecchymosis with irregular shapes
(c) Auto-immune disorder and never associated with any infection
(d) Asplenic patients are protected and do not develop this disease

**72.** An elderly male presents with papular lesions on his face. The papules are with pearly telangiectatic border on sun-damaged skin. The likely diagnosis is :
(a) Squamous cell carcinoma
(b) Melanoma
(c) Basal cell carcinoma
(d) Actinic keratosis

**73.** Allergic contact dermatitis is a manifestation of:
(a) Type 1 hypersensitivity
(b) Type 2 hypersensitivity
(c) Type 3 hypersensitivity
(d) Type 4 hypersensitivity

**74.** Which one of the following is an example of non-scarring alopecia ?
(a) Linear scleroderma
(b) Cutaneous metastases
(c) Telogen effluvium
(d) Sarcoidosis

**75.** Which of the following statements are correct in respect of scabies?
1. Male mite Sarcoptes scabiei are commonly transferred from an infected person to a non-infected person.
2. Norwegian scabies occur in immunodeficient patients.
3. Permethrin cream (5%) is used for treatment.
4. Pruritus intensifies at night and after hot shower.

Select the answer using the code given below :
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**76.** Heberden's nodes are present mainly in :
(a) Rheumatoid arthritis
(b) Osteoarthritis
(c) Psoriatic arthritis
(d) Gouty arthritis

**77.** A patient developed difficulty in standing from a seated position, walking up steps, squatting and lifting arms overhead. Chronic therapy with which of the following drugs is likely to result in such presentation?
(a) Acetaminophen
(b) Fexofenadine
(c) Glucocorticoids
(d) Metformin

**78.** Hemorrhagic cystitis is a serious side effect of :
(a) Leflunomide
(b) Mycophenolate mofetil
(c) Cyclophosphamide
(d) Methotrexate

**79.** Schober's test is used in the assessment of which one of the following clinical conditions ?
(a) Rheumatoid arthritis
(b) Systemic Lupus Erythematosus
(c) Ankylosing Spondylitis
(d) Psoriasis

**80.** Urate crystals are described as having the following shape :
(a) Short and stout
(b) Long and needle-like
(c) Small and triangular
(d) Large and rhomboid

**81.** Anti-citrullinated peptide antibody is useful in diagnosis of :
(a) Rheumatoid arthritis
(b) Sjogren's syndrome
(c) Scleroderma
(d) Systemic Lupus Erythematosus

**82.** Which one of the following antibodies is commonly associated with Drug-induced Lupus ?
(a) Anti-centromere antibody
(b) Anti-Jo-1 antibody
(c) Anti-histone antibody
(d) Anti-RNP antibody

**83.** Long term treatment of bipolar disorder with lithium carbonate can cause which of the following adverse effects ?
1. Weight loss
2. Hypothyroidism
3. Increased levels of parathyroid hormone
4. Nephrogenic diabetes insipidus

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**84.** Which of the following antidepressant drugs act by inhibition of monoamine oxidase ?
1. Phenelzine
2. Tranylcypromine
3. Dosulepin
4. Moclobemide

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

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**85.** Which of the following are selective serotonin re-uptake inhibitors?
1. Escitalopram
2. Amitriptyline
3. Fluoxetine
4. Sertraline

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**86.** Which of the following are First Rank Symptoms of acute schizophrenia?
1. Auditory hallucinations
2. Broadcasting of thoughts
3. Delusional perceptions
4. Delirium

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**87.** Consider the following statements regarding Wernicke-Korsakoff syndrome:
1. It is a rare complication of chronic alcohol misuse characterised by ophthalmoplegia, ataxia and delirium.
2. There is damage to the mammillary bodies and dorsomedial nuclei of thalamus.
3. The underlying cause is deficiency of Vitamin B12 (Cobalamin).
4. The syndrome can also arise due to malabsorption or protracted vomiting.

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**88.** Which of the following are inherited causes of dementia?
1. Alzheimer's disease
2. Huntington's disease
3. Wilson's disease
4. Punch-drunk syndrome

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

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**89.** Which of the following are classified as mood-stabilising psychotropic drugs?
1. Lithium
2. Valproate
3. Lamotrigine

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**90.** Which of the following are correct regarding acetaminophen?
1. It does not interfere with platelet function.
2. It is toxic to the liver in high doses.
3. It is a non-narcotic analgesic.

Select the answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**91.** Which of the following are causes of acquired systemic amyloidosis?
1. Tuberculosis
2. Multiple myeloma
3. Untreated rheumatoid arthritis
4. Chronic osteomyelitis

Select the correct answer using the code given below:
(a) 2 and 3 only
(b) 1 and 4 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

**92.** Which of the following statements are correct with regard to glucose homeostasis?
1. Insulin level rises postprandially.
2. Major portion of postprandial glucose is used by skeletal muscle.
3. Brain uses glucose in an insulin-dependent manner.
4. Glucagon is secreted during exercise.

Select the answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**93.** Consider the following pancreatic hormones:
1. Insulin
2. Islet amyloid polypeptide or amylin
3. Glucagon
4. Somatostatin

Which of the above is/are secreted by beta cells of the pancreatic islets?
(a) 1 only
(b) 2 and 3
(c) 1 and 2
(d) 1 and 4

**94.** Consider the following statements regarding Acute Respiratory Distress Syndrome (ARDS):
1. Exudative phase lasts from day 7 to day 21 after exposure to a precipitating risk factor.
2. Proliferative phase is characterised by proliferation of type II pneumocytes.
3. Low tidal volume ventilation (6 mL/kg body weight) has significantly lower mortality in management as compared to high tidal volume ventilation (12 mL/kg body weight).
4. $PaO_2/FiO_2 \leq 100$ mm Hg is classified as severe ARDS.

Which of the statements given above are correct?
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

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**95.** Consider the following statements regarding organophosphate-induced delayed polyneuropathy (OPIDN):
1. It is a rare complication and occurs 2 – 3 weeks after acute exposure.
2. It is a feature of poisoning with certain organophosphorus compounds such as triorthocresyl phosphate.
3. Inhibition of acetylcholinesterase causes motor polyneuropathy with no evidence of sensory loss.
4. There is no specific therapy although regular physiotherapy may limit deformity caused by muscle wasting.

Which of the statements given above are correct?
(a) 1 and 2 only
(b) 1, 2 and 3
(c) 1, 2 and 4
(d) 2, 3 and 4

**96.** Consider the following statements regarding paracetamol toxicity:
1. Toxicity is caused by an intermediate reactive metabolite that binds covalently to cellular proteins causing cell death.
2. Antidotes for paracetamol act by replenishing hepatic glutathione and should be administered to all patients with acute poisoning.
3. Intravenous acetyl cysteine is a highly efficacious antidote if administered within 8 hours of the overdose.
4. Methionine may be used as an alternative antidote but it is less effective than acetyl cysteine.

Which of the statements given above are correct?
(a) 1 and 4 only
(b) 1, 2 and 3
(c) 2, 3 and 4
(d) 1, 2, 3 and 4

**97.** Which one of the following statements is correct regarding physiology of breastfeeding ?
(a) Prolactin is responsible for ejection of milk from the glands.
(b) Night feeding is important for maintaining prolactin reflex.
(c) Oxytocin is responsible for milk secretion by the alveolar epithelial cells.

(d) Oxytocin is secreted by the anterior pituitary.

**98.** Which one of the following fine motor milestones will appear ahead of others ?
(a) Copies a cross
(b) Copies a circle
(c) Draws a circle
(d) Draws a cross

**99.** In case of hypertensive emergency in a child, blood pressure should be reduced by up to :
(a) 10% over the first 8 hours
(b) 15% over the first 8 hours
(c) 10% in the first hour
(d) 15% in the first hour

**100.** At what cut-off respiratory rate will you consider 'fast breathing' in a 2-year-old child ?
(a) $\geq$ 60 per minute
(b) $\geq$ 50 per minute
(c) $\geq$ 40 per minute
(d) $\geq$ 30 per minute

**101.** Which of the following are used in the management of hyperkalemia ?
1. 10% calcium gluconate intravenously
2. Regular insulin and intravenous glucose
3. Nebulized ipratropium bromide
4. Intravenous sodium bicarbonate

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**102.** Nebulized salbutamol is used in the management of which of the following electrolyte abnormality ?
(a) Hypernatremia
(b) Hyperkalemia
(c) Hyponatremia
(d) Hypomagnesemia

**103.** Which of the following are correct regarding activities under the Weekly Iron and Folic Acid Supplementation (WIFS) programme ?
1. Administration of supervised weekly iron-folic acid supplements of 100 mg elemental iron and 500 μg folic acid
2. Administration of supervised weekly iron-folic acid supplements of 60 mg elemental iron and 0.5 mg folic acid
3. Biannual de-worming with albendazole
4. Annual de-worming with albendazole

Select the answer using the code given below :
(a) 1 and 4
(b) 1 and 3
(c) 2 and 4
(d) 2 and 3

**104.** Under the Integrated Management of Neonatal and Childhood Illness, caretakers are advised to return immediately to a health facility, if
1. Any sick child is not able to drink or breast feed.
2. Fast breathing or difficult breathing, in a child who has no pneumonia.
3. Blood in stool, in a child with diarrhoea.
4. Conjunctivitis in a child with measles.

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 3 and 4 only
(d) 2, 3 and 4

**105.** Which of the following statements are correct regarding the fluid management of pediatric inpatients with burn injuries ?
1. The Parkland formula estimates the amount of fluid to be replaced over 24 hours.
2. Volume of fluid (mL) = 4 mL $\times$ Weight (kg) $\times$ Total body surface area burn (%).
3. Additional maintenance fluid therapy is also to be given to the child.
4. Half of the resuscitation volume should be given over 6 hours and the remaining half over the next 18 hours.

Select the answer using code given below :
(a) 1, 2 and 4
(b) 1, 2 and 3

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(c) 1, 3 and 4
(d) 2, 3 and 4

**106.** Whole Bowel Irrigation (WBI) as a method of gastrointestinal decontamination is useful for poisoning with :
(a) Alcohol
(b) Iron
(c) Kerosene
(d) Organophosphorus

**107.** To prevent recurrence, expectant mothers with a previous fetus with neural tube defect should receive folic acid daily at the dose of :
(a) 4 µg
(b) 400 µg
(c) 4 mg
(d) 400 mg

**108.** Consider the following statements regarding non-invasive prenatal screening (NIPS) for screening high risk pregnancies for aneuploidies :
1. It is carried out on maternal blood.
2. It is done before 10 weeks gestation.
3. It has a negative predictive value of about 98%.
4. Invasive testing is needed for confirmation of a positive test.

Which of the statements given above are correct ?
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**109.** The risk of Down syndrome is 100% in the offspring, if :
(a) Mother only is the carrier of balanced translocation
(b) Father only is the carrier of balanced translocation
(c) Both parents are carriers of balanced translocation
(d) Either parent is a carrier of translocation between two chromosome 21

**110.** Which of the following are examples of genomic imprinting ?
1. Angelman syndrome
2. Williams syndrome
3. Prader-Willi syndrome
4. DiGeorge syndrome

Select the correct answer using the code given below:
(a) 1 and 3
(b) 1 and 2
(c) 2 and 3
(d) 2 and 4

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**111.** Poisoning with which of the following drugs causes hypothermia ?
(a) Digoxin
(b) Chlorpromazine
(c) Iron
(d) Alcohol

**112.** Consider the following pairs :
Urine colour → Possible causative agent in a child with suspected poisoning
1. Pink → Cephalosporin
2. Brown → Chloroquine
3. Greenish blue → Phenazopyridine
4. Red-orange → Amitriptyline

How many of the pairs given above are correctly matched ?
(a) Only one pair
(b) Only two pairs
(c) Only three pairs
(d) All four pairs

**113.** Consider the following agents and the cardiac effects in case of overdose or poisoning :
1. Prolonged PR interval → Lithium
2. Prolonged QTc interval → Amiodarone
3. Wide QRS complex → Kerosene ingestion
4. Tachycardia → Organophosphates

How many of the pairs given above are correctly matched ?
(a) Only one pair
(b) Only two pairs
(c) Only three pairs
(d) All four pairs

**114.** If a baby does not begin breathing in response to tactile stimulation, then the baby is assumed to be in :
(a) Primary apnea
(b) Secondary apnea
(c) Tertiary apnea
(d) Cardiorespiratory arrest

**115.** Consider the following conditions :

| | Response to tactile stimulation | Heart Rate | Blood Pressure | Tone |
|---|---|---|---|---|
| A | Yes | Normal | Normal | Normal |
| B | Yes | Falling | Normal | Decreasing |
| C | No | Falling | Falling | Decreasing |
| D | No | Rising | Normal | Normal |

Primary apnea in a neonate is characterized by which one of the above conditions ?
(a) A
(b) B
(c) C
(d) D

**116.** Consider the following statements about human breast milk :
1. 75% of breast milk content is water.
2. Breast milk is poor in taurine and cysteine.
3. Breast milk is particularly rich in omega 2 and omega 6 fatty acids.
4. High lactose content of breast milk helps in absorption of calcium.

Which of the statements given above are correct ?
(a) 1, 3 and 4
(b) 1 and 4 only
(c) 1 and 3 only
(d) 3 and 4 only

**117.** Which of the following are signs of good attachment during breastfeeding ?
1. The baby's nose is at the level of the nipple.
2. The baby's mouth is wide open.
3. The baby's chin touches the breast.
4. The baby's lower lip is everted.

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

**118.** A 6-year-old boy has recently started telling his full name, although he cannot recite a poem. His Developmental Quotient (DQ) in the language sphere is :
(a) 33%
(b) 50%
(c) 66%
(d) 83%

**119.** Consider the following statements :
1. Hepatitis B vaccine has reduced efficacy, if administered intramuscularly.
2. The maximum time allowed between reconstitution of MMR vaccine and use is 30 minutes.
3. Maternal antibodies do not interfere with cellular immune response to BCG vaccine.
4. DTwP is preferred to DTaP for primary immunization in most children.

Which of the statements given above are correct ?
(a) 1 and 2
(b) 1 and 3
(c) 2 and 4
(d) 3 and 4

**120.** Rotavirus vaccination is avoided during an episode of diarrhoea because :
(a) It might compromise uptake of vaccine
(b) It could trigger an episode of intussusception
(c) Rotavirus vaccine is a live vaccine and hence may cause rotavirus diarrhoea and worsen the diarrhoeal episode
(d) Vomiting is a significant adverse effect of Rotavirus vaccine

END

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# PAPER 2024 ANSWERS

1. (a) Right atrial pressure

The jugular venous pulse (JVP) directly reflects right atrial and central venous pressures, since the internal jugular vein communicates with the right atrium without any intervening valves. Factors that raise right atrial pressure (e.g., fluid overload, right heart failure) will elevate the JVP. Conversely, decreases in right atrial pressure lower the JVP. Thus, right atrial pressure is the key determinant of JVP height.

2. (a) SVC and RA (Superior Vena Cava and Right Atrium)

The sinoatrial (SA) node, known as the natural pacemaker of the heart, lies in the right atrium at the junction where the superior vena cava (SVC) enters. Its location allows it to generate regular impulses that spread through the atria, triggering coordinated atrial contraction and ultimately dictating normal heart rhythm. The right atrium's structure and blood supply support this crucial pacemaker function, ensuring the heartbeat originates from this strategic anatomical site.

3. (d) 1, 2 and 3 (Beri-beri, Severe anaemia, Thyrotoxicosis)

High-output heart failure arises when cardiac output is elevated but still inadequate to meet the body's metabolic needs. Beriberi (thiamine deficiency) impairs cellular energy use and leads to vasodilation, raising cardiac demand. Severe anemia reduces oxygen-carrying capacity, forcing the heart to pump harder. Thyrotoxicosis accelerates metabolism, again requiring increased cardiac output. In each condition, the body's demands are abnormally high, overburdening the heart even though it is contracting vigorously, resulting in heart failure symptoms.

4. (c) LBBB (Left Bundle Branch Block)

Normally, the second heart sound (S2) is composed of aortic (A2) and pulmonary (P2) components. In reverse (paradoxical) splitting, P2 occurs before A2, so the split narrows on inspiration and widens on expiration—opposite of normal. This typically happens when left ventricular activation or ejection is delayed, as in left bundle branch block (LBBB). The delayed closure of the aortic valve relative to the pulmonary valve leads to this reversed pattern of S2 splitting.

5. (a) 1, 2 and 3 (Chorea, Erythema Marginatum, Subcutaneous Nodules)

Traditional major Jones criteria for acute rheumatic fever include carditis, polyarthritis, chorea, erythema marginatum, and subcutaneous nodules. Although polyarthritis is a major criterion, simple polyarthralgia (joint pains without clear inflammatory signs) is not classified as a major one. Chorea ("Sydenham's chorea") and erythema marginatum are pathognomonic features, while subcutaneous nodules are less common but remain on the major criteria list. Recognition of these helps guide diagnosis and management of rheumatic fever.

6. (c) Aortic stenosis

A loud, harsh, crescendo-decrescendo (diamond-shaped) systolic murmur heard in the right second intercostal space radiating to the carotids is classic for aortic stenosis. In older adults, it often results from calcific degeneration of the aortic valve. The murmur's transmission to the carotid area and the diminished or single S2 (from reduced movement of the calcified valve) further support the diagnosis. Patients typically present with exertional dyspnea, angina, and possible syncope due to obstructed outflow from the left ventricle.

7. (d) $CHA_2DS_2$-VASc

The $CHA_2DS_2$-VASc scoring system evaluates stroke risk in atrial fibrillation (AF) patients

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without significant valvular disease. It assigns points for Congestive heart failure, Hypertension, Age ≥75 (doubled), Diabetes, Stroke/TIA/thromboembolism (doubled), Vascular disease, Age 65–74, and female Sex category. A higher score correlates with greater stroke risk, guiding decisions on anticoagulation therapy. HAS-BLED, on the other hand, gauges bleeding risk, and CURB-65 is for pneumonia severity. AMT-4 is an abbreviated mental test, not related to AF stroke risk.

**8.** (a) 1 and 2 only

Pulmonary embolism (PE) often presents with sudden, unexplained dyspnea, making it a top consideration when patients have acute breathlessness with no clear cause. Additionally, when conditions such as heart failure or pneumonia fail to improve under appropriate treatment, an undiagnosed PE should be suspected. However, in patients with a high clinical pretest probability of PE, diagnostic imaging (e.g., CT pulmonary angiography) is generally indicated without relying solely on D-dimer. D-dimer testing is used primarily when the clinical probability is low or moderate.

**9.** (d) 1, 2 and 3

Light's criteria define exudative effusions. If any one of the following is met, the fluid is considered exudative: (1) Pleural fluid protein to serum protein ratio 0.5, (2) Pleural fluid LDH to serum LDH ratio 0.6, or (3) Pleural fluid LDH two-thirds the upper limit of normal serum LDH. These criteria help differentiate exudates (often due to infections, malignancies, inflammatory processes) from transudates (commonly linked to heart failure or cirrhosis).

**10.** (b) 1, 3 and 4

Clubbing typically presents as a symmetric enlargement of the distal segments of fingers (and can also affect toes), caused by proliferating connective tissue. Hence, the statement claiming it "does not involve the toes" is incorrect. Clubbing can be associated with a range of conditions, including lung cancer, bronchiectasis, cystic fibrosis, and congenital heart disease. When the underlying cause is corrected, such as via lung transplantation in certain cystic fibrosis patients, the clubbing may diminish over time.

**11.** (d) 1, 2 and 3

Löfgren syndrome is a classic acute form of sarcoidosis, frequently seen in young women, marked by erythema nodosum, bilateral hilar lymphadenopathy, fever, and arthritis/arthralgias. Uveitis can also be part of this syndrome, reflecting multisystem inflammatory involvement. Its acute onset and higher prevalence in females set it apart from more chronic forms of sarcoidosis. Recognition of Löfgren syndrome is important, as it often has a better prognosis and may spontaneously resolve without extensive therapy.

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**12.** (a) 1, 2 and 3

Diagnosing pulmonary tuberculosis relies on direct and indirect methods of detecting Mycobacterium tuberculosis. Nucleic acid amplification tests (like GeneXpert) rapidly identify mycobacterial DNA. Culture in specialized media (e.g., Middlebrook or Lowenstein-Jensen) provides definitive evidence but is time-consuming. Light-emitting diode (LED) fluorescence microscopy with auramine staining is more sensitive than conventional staining. Peripheral blood smear is not a standard diagnostic tool for pulmonary TB. Combining rapid molecular tests, culture, and fluorescent microscopy improves diagnostic accuracy.

**13.** (d) Exercise capacity

The BODE Index in COPD evaluates four domains: Body mass index (B), the degree of airflow Obstruction (O), Dyspnea (D) as measured by the MMRC scale, and Exercise capacity (E). The six-minute walk test (6MWT) is used to measure exercise tolerance, reflecting how well a patient can perform physically despite compromised pulmonary function. A shorter distance walked usually corresponds to poorer exercise capacity, indicating worse prognosis. Thus, the 6MWT result is central to the "E" component in BODE.

**14.** (b) Silicosis

Silicosis is a pneumoconiosis caused by inhaling crystalline silica dust, commonly seen in stone-cutters, sandblasters, and miners. Radiologically, it can present with multiple nodular opacities predominantly in the upper lobes and characteristic "eggshell" calcification of hilar lymph nodes. Byssinosis relates to cotton dust exposure; berylliosis typically involves aerospace or high-tech ceramics; siderosis pertains to iron dust. The strong occupational history plus the classic radiographic findings point to silicosis as the most likely diagnosis.

**15.** (b) 1, 3 and 4 (Hypoxia, Hyperglycemia, Reduced serum albumin)

Acute pancreatitis can trigger systemic inflammation and respiratory compromise, often manifesting as hypoxia. Hyperglycemia occurs if the pancreatic endocrine cells are temporarily or permanently damaged, impairing insulin secretion. While hypocalcemia is more typical in acute pancreatitis (due to fat necrosis binding calcium), hypercalcemia is not a recognized complication here. Reduced serum albumin may occur in severe, prolonged illness from poor nutritional status or liver dysfunction. Thus, hypoxia, hyperglycemia, and lowered albumin are recognized complications.

**16.** (a) Endoscopic small bowel biopsy

The definitive (gold standard) method to diagnose celiac disease is to obtain small intestinal mucosal samples via endoscopic biopsy. Characteristic histopathological findings—such as villous atrophy, crypt hyperplasia, and increased intraepithelial lymphocytes—confirm the diagnosis. Although serologic tests (anti-tTG, anti-endomysial antibodies) are highly useful for screening, biopsy remains the reference standard to establish the diagnosis, assess disease severity, and rule out other causes of similar small bowel changes.

**17.** (b) 1, 2 and 4

Triple therapy for H. pylori generally comprises a proton-pump inhibitor (PPI) plus two antibiotics (e.g., clarithromycin and amoxicillin/metronidazole), and it is prescribed for at least 7–14 days. Addressing H. pylori in those requiring long-term NSAIDs significantly reduces the risk of peptic ulcers and rebleeding. Although prolonged PPI use can sometimes affect vitamin B12 absorption, H. pylori eradication itself is not classically a direct cause of vitamin B12 deficiency. Hence, statements 1, 2, and 4 are correct.

**18.** (d) 1, 2 and 3

Hepatic encephalopathy in cirrhotic patients can be triggered by several factors that raise blood ammonia or other toxins. Hypokalemia (often related to diuretic use) promotes renal ammonia production; infections or sepsis (e.g., spontaneous bacterial peritonitis) worsen hepatic dysfunction; and increased dietary protein load raises nitrogenous substrates available for ammonia generation. Identifying and correcting these precipitating factors, along with lactulose and/or rifaximin therapy, are central to managing and preventing recurrent episodes of hepatic encephalopathy.

**19.** (b) Eradication of Helicobacter pylori in patients with bleeding ulcers decreases the rebleeding rates to less than 5%.

Peptic ulcers (especially if H. pylori-positive) account for the most common cause of upper GI bleeding rather than varices. Once an H. pylori-positive bleeding ulcer is treated endoscopically, eradication therapy substantially lowers ulcer recurrence and rebleeding risk—often to well below 5%. Patients requiring aspirin for secondary prevention of cardiovascular events usually resume it after controlling the GI bleed. TIPS is reserved for refractory or recurrent variceal hemorrhage rather than mandating a fixed hospitalization period.

**20.** (a) Autosomal recessive disorder

Crigler-Najjar syndrome type I is a rare, severe disorder of bilirubin metabolism caused by an absence of the enzyme uridine diphosphate glucuronyl transferase (UGT1A1). It is passed down in an autosomal recessive manner, requiring both parents to pass on a mutated

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gene for the syndrome to manifest. Affected individuals present with markedly elevated unconjugated bilirubin from birth, often leading to kernicterus if untreated. Phototherapy and, in some cases, liver transplantation may be necessary.

**21.** (d) Periodic acid Schiff

Whipple's disease, caused by Tropheryma whipplei, features periodic acid–Schiff (PAS)-positive "foamy" macrophages in the intestinal lamina propria. PAS highlights the glycoprotein content within these macrophages, creating a distinctive magenta coloration. Clinically, Whipple's disease manifests with malabsorption, diarrhea, weight loss, and sometimes systemic features such as arthralgias or neurologic symptoms. The PAS-positive macrophages are pathognomonic, helping differentiate Whipple's from other causes of malabsorption or inflammatory bowel diseases.

**22.** (d) Neomycin or Rifaximin

Hepatic encephalopathy arises largely from elevated ammonia and other toxins produced by gut bacteria. Non-absorbable antibiotics, such as rifaximin or neomycin, reduce gut flora responsible for ammonia production without significant systemic absorption. By lowering ammonia levels, they help prevent or mitigate encephalopathic episodes when combined with lactulose. In contrast, tenofovir, telbivudine, sofosbuvir, and velpatasvir are antiviral agents, while levofloxacin and clarithromycin are more readily absorbed systemically and used for other specific infections.

**23.** (b) 1 and 2 only

A low SAAG (<1.1 g/dL) indicates that ascites is not primarily due to portal hypertension. Instead, it typically arises from infection (e.g., tuberculosis), malignancy (e.g., peritoneal carcinomatosis), or other exudative processes. By contrast, high SAAG (≥1.1 g/dL) suggests portal hypertension, such as in cirrhosis, Budd-Chiari syndrome, or cardiac ascites. Classifying ascitic fluid by SAAG helps clinicians rapidly narrow down the probable etiology and guide further investigations or treatment strategies.

**24.** (c) Achalasia cardia

In achalasia cardia, failure of the lower esophageal sphincter (LES) to relax results in a "bird's beak" or tapering appearance on barium swallow. Over time, the esophagus above the LES becomes markedly dilated, producing the classic sigmoid shape in advanced cases. Patients present with progressive dysphagia to solids and liquids, regurgitation, and sometimes weight loss. Manometry confirms high resting LES pressure and incomplete relaxation. Treatment often involves endoscopic balloon dilatation or surgical myotomy.

**25.** (a) B, F, G

"B: Hematuria" together with "F: Red cell casts" characterizes a glomerular source of bleeding ("G: Glomerular bleeding"). RBC casts specifically implicate an origin within the glomeruli or renal tubules. By contrast, myoglobinuria (A) shows a positive dipstick test but no RBCs on microscopy (E) and is linked to rhabdomyolysis (I). Hemoglobinuria (C) also typically lacks intact RBCs on microscopy, pointing to intravascular hemolysis (H). Thus B, F, G is the correctly aligned triplet.

**26.** (a) 1 and 2 only

Anti-GBM disease (Goodpasture syndrome) is a rare autoimmune disorder characterized by rapidly progressive glomerulonephritis, sometimes accompanied by pulmonary hemorrhage if alveolar basement membranes are also targeted. Pathogenic antibodies attack the α3 chain of type IV collagen found predominantly in glomerular and alveolar basement membranes. Retinal involvement is not a feature of classic anti-GBM disease, so references to retinal hemorrhage are incorrect in this condition. Consequently, only statements 1 and 2 are correct.

**27.** (c) 2, 3 and 4 only

Poor prognostic factors in glomerular diseases typically include sustained hypertension, severe or persistent proteinuria (often >3–3.5 g/day), and elevated serum creatinine at diagnosis. These

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findings suggest active disease and significant renal impairment, both of which predict a worse outcome if not controlled. Female sex alone is not considered a negative prognostic factor; male sex often carries a slightly worse prognosis in certain nephropathies. Careful blood pressure control and reduction in proteinuria are key to improving outcomes.

**28.** (b) 1, 2 and 4

A renal biopsy is indicated in chronic kidney disease (CKD) of unclear cause, in acute or chronic nephritic syndrome to determine underlying pathology, and to assess unexplained dysfunction in a renal transplant. Typically, "uncontrolled severe hypertension" is a relative contraindication rather than an indication, as severe elevations in blood pressure increase bleeding risk. Before biopsy, blood pressure and coagulation must be stabilized. Identifying specific histopathological findings often guides targeted therapy and prognosis.

**29.** (a) 60 – 89 mL/min/1.73 $m^2$

According to the KDIGO (Kidney Disease: Improving Global Outcomes) guidelines, CKD is staged by GFR:

1. Stage 1: $\geq$90 mL/min/1.73 $m^2$ (with kidney damage markers)
2. Stage 2: 60–89 mL/min/1.73 $m^2$
2. Stage 3a: 45–59 mL/min/1.73 $m^2$
3. Stage 3b: 30–44 mL/min/1.73 $m^2$
4. Stage 4: 15–29 mL/min/1.73 $m^2$
5. Stage 5: <15 mL/min/1.73 $m^2$ or on dialysis

Stage 2 suggests mild decrease in GFR along with other markers of renal impairment.

**30.** (a) 1, 2 and 3

The widely accepted Rotterdam criteria require any two of three findings to diagnose PCOS: (1) Oligo-/anovulation or menstrual irregularities, (2) Clinical or biochemical hyperandrogenism, and (3) Polycystic ovaries on ultrasound. A low BMI (<18.5 kg/$m^2$) is not a formal diagnostic requirement for PCOS and, in fact, many patients are overweight or obese. The presence of multiple ovarian cysts, irregular cycles, and androgen excess collectively fulfill the typical triad in PCOS.

**31.** (c) Gonorrhoea

A profuse, purulent urethral discharge with Gram-negative intracellular diplococci on microscopy is strongly indicative of Neisseria gonorrhoeae infection. Typical features include dysuria, copious purulent discharge, and the characteristic bacteriologic finding of Gram-negative diplococci often within polymorphonuclear leukocytes. Chlamydial infections usually present with a more mucoid discharge, genital herpes is caused by HSV and presents differently, and syphilis is classically diagnosed via serology or dark-field microscopy of ulcer exudate rather than urethral discharge.

**32.** (d) 1, 2, 3 and 4

All four listed conditions can present with hypocomplementemia and nephritic-range proteinuria. Systemic lupus erythematosus (SLE) commonly lowers complement levels via immune complex deposition. Post-infectious glomerulonephritis (especially post-streptococcal) often causes low C3. Infective endocarditis can lead to immune complex–mediated glomerulonephritis with low complement. Mesangiocapillary (membranoproliferative) GN similarly involves immune complexes and complement activation. Each of these diseases can therefore be implicated when low serum complement and nephritic findings are identified.

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**33.** (a) 1, 2, 3 and 4

Parkinsonism typically manifests with a masked facial expression (hypomimia), reduced voice volume or dysphonia (hypophonia), festinating (shuffling, hurried) gait, and "cogwheel" rigidity on passive limb movement. These cardinal features emerge from dopamine deficiency within the nigrostriatal pathway. Patients may also exhibit bradykinesia and postural instability. Taken together, 1 (hypomimia), 2 (dysphonia), 3 (festination), and 4 (cogwheel rigidity) reflect hallmark signs of Parkinson's disease.

**34.** (a) Tremor and rigidity

Extrapyramidal lesions classically produce movement and muscle tone abnormalities such as Parkinsonian tremor (rest tremor) and rigidity (cogwheel or lead pipe). The basal ganglia's role in modulating motor output means its dysfunction leads to characteristic disorders like Parkinson's disease (bradykinesia, tremor, rigidity) or other dyskinesias. Seizures (b), urinary incontinence (c), and direct muscle wasting (d) are not typical presentations of primary extrapyramidal system damage.

**35.** (b) 1, 2 and 4

Transient Global Amnesia typically features sudden-onset anterograde (and sometimes retrograde) amnesia, with normal consciousness and motor function. Patients cannot form new memories, repeating questions. Episodes often resolve within hours, but they retain a "gap" in memory for the event itself. Statement 3 is incorrect because consciousness and basic motor functions remain intact. Hence, statements 1, 2, and 4 accurately describe TGA.

**36.** (c) Parietal lobe

In the visual pathway, fibers carrying information from the upper visual field travel in the lower retina and then pass through the parietal lobe (the dorsal optic radiation). A lesion in this parietal pathway typically leads to a "pie on the floor" defect—contralateral homonymous lower quadrantanopia. By contrast, lesions in the temporal lobe (Meyer's loop) cause upper quadrantanopia, often called "pie in the sky."

**37.** (a) Downwards and outwards

In an oculomotor nerve (cranial nerve III) palsy, the only extraocular muscles left functioning in the affected eye are the lateral rectus (innervated by CN VI) and superior oblique (innervated by CN IV). These pull the eye "down and out." Because the third nerve normally controls most other eye movements and levator palpebrae superioris, patients may also present with ptosis (eyelid droop) and a dilated pupil if parasympathetic fibers are involved.

**38.** (d) 1, 2, 3 and 4

Cluster headaches are short-lasting but extremely painful headaches that recur in "clusters"—often at the same time over several weeks. The pain is unilateral, periorbital, and can last from 15 to 180 minutes (30–90 is typical). Prominent autonomic symptoms like ipsilateral lacrimation, nasal congestion, and conjunctival injection frequently accompany the pain. Subcutaneous sumatriptan or high-flow oxygen are effective acute treatments. All four statements accurately describe cluster headaches.

**39.** (c) Medication overuse headache

Medication overuse headache (rebound headache) can occur when acute headache medications—especially triptans, analgesics, or combination drugs—are used excessively. Patients may have a history of primary headache such as migraine that becomes refractory, with near-daily or daily headaches. Overuse of sumatriptan or other abortive therapies paradoxically perpetuates the headache cycle. The key clue is daily or near-daily triptan use over weeks.

**40.** (b) 1, 2, 3 and 4

Seizures can be provoked by multiple potential triggers. Flickering lights (photosensitive epilepsy), illicit or recreational drugs (e.g., stimulants, alcohol withdrawal), non-compliance with prescribed antiepileptics (leading to subtherapeutic levels), and sleep deprivation are all well-recognized precipitants. Identifying and avoiding these triggers is vital in seizure management, alongside appropriate medication adherence.

**41.** (a) Temporal artery biopsy

Elderly patients presenting with headache localized to the temporal area, jaw claudication (pain on chewing), and elevated inflammatory markers should be evaluated for Giant Cell (Temporal) Arteritis. The gold standard diagnostic test is a temporal artery biopsy, revealing granulomatous inflammation. Delay in diagnosis can result in permanent vision loss. Prompt high-dose corticosteroids are crucial if suspicion is high.

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**42.** (d) Chronic Lymphocytic Leukemia

Rai and Binet are the classic staging methods for Chronic Lymphocytic Leukemia (CLL). They stratify disease severity based on lymphocytosis, presence of lymphadenopathy, hepatosplenomegaly, anemia, and thrombocytopenia. Rai staging is commonly used in the U.S., while Binet staging is more prevalent in Europe. These systems help guide treatment decisions and prognostication for CLL patients.

**43.** (a) Mycosis fungoides

Mycosis fungoides is a cutaneous T-cell lymphoma that may masquerade as chronic, resistant eczematous or psoriasiform rashes for years before diagnosis. Over time, it can progress from patches/plaques to more infiltrative lesions or even tumor-stage disease. Diagnosis often requires repeated skin biopsies, showing characteristic Sezary or Lutzner cells. Prompt recognition can improve management and delay progression.

**44.** (a) Dabigatran

Dabigatran etexilate is a direct thrombin inhibitor and is administered orally. Heparin (unfractionated) is given parenterally; low molecular weight heparins (e.g., enoxaparin) are given subcutaneously. Fondaparinux is a synthetic pentasaccharide also given parenterally. Bivalirudin is administered intravenously. Dabigatran's oral availability and predictable pharmacokinetics allow for fixed dosing without routine lab monitoring in most patients, contrasting traditional vitamin K antagonists like warfarin.

**45.** (a) Prednisolone

The initial treatment of warm autoimmune hemolytic anemia generally involves high-dose corticosteroids (e.g., prednisone/prednisolone). Steroids reduce autoantibody production and RBC destruction. Rituximab or splenectomy are important second-line options if steroid therapy is insufficient or relapse occurs. Plasmapheresis is less commonly used for warm AIHA unless the situation is life-threatening and other measures have failed. Prompt corticosteroid therapy can often quickly mitigate hemolysis and improve hemoglobin levels.

**46.** (d) Inadequate renal perfusion due to renal artery stenosis

Secondary hyperaldosteronism arises from activation of the renin-angiotensin-aldosterone system (RAAS) external to the adrenal gland. Reduced renal perfusion—such as in renal artery stenosis—drives up renin release, which in turn stimulates aldosterone secretion. By contrast, an aldosterone-producing adenoma (Conn's syndrome) or bilateral adrenal hyperplasia cause primary hyperaldosteronism. A tumor secreting 11-deoxycorticosterone leads to a different mechanism of mineralocorticoid excess.

**47.** (c) Riedel's thyroiditis

Riedel's thyroiditis is a rare form of chronic thyroiditis in which extensive fibrosis replaces normal thyroid tissue, making the gland "woody," hard, and fixed. Although Hashimoto's thyroiditis also involves lymphocytic infiltration and raises the risk of lymphoma, Riedel's specifically features marked fibrotic invasion extending beyond the thyroid into surrounding structures. This fibrosing process can compress local structures and mimic malignancy. It is sometimes considered part of a systemic "IgG4-related" fibrosing process.

**48.** (a) Propranolol

Nonselective β-blockers like propranolol can mask sympathetic warning signs of hypoglycemia (e.g., tachycardia, tremors) and impede glycogenolysis, making hypoglycemia more dangerous in diabetics. Cardioselective $\beta_1$-blockers (e.g., metoprolol) are less likely to blunt hypoglycemia awareness but can still pose some risk. ACE inhibitors, ARBs (like telmisartan), and certain diuretics or calcium channel blockers (like amlodipine) are generally preferred if no other contraindications exist.

**49.** (a) 1, 3 and 4

Cortisol follows a diurnal rhythm, peaking in early morning, making statement (1) correct. In serious stress or illness, cortisol actually rises

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rather than "falling dramatically," so statement (2) is incorrect. Over 90% of circulating cortisol is bound to corticosteroid-binding globulin (CBG) and albumin, supporting (3). Cortisol is the principal glucocorticoid in humans and can also exert some mineralocorticoid effects by binding aldosterone receptors, confirming (4).

**50.** (a) Parathyroid hormone assay

"Bones, stones, abdominal groans" classically describes hypercalcemia, most often from hyperparathyroidism. Excess parathyroid hormone causes bone demineralization ("bones"), kidney stones ("stones"), and gastrointestinal disturbances ("groans"). Measurement of PTH is key to confirming primary hyperparathyroidism. Thyroid tests, cortisol levels, and insulin/C-peptide do not directly address hypercalcemia. An elevated PTH in the presence of high serum calcium is diagnostic for hyperparathyroidism.

**51.** (c) 1, 2 and 4

Propylthiouracil (PTU) can be used in the first trimester of pregnancy or in certain breastfeeding scenarios (1). Surgery is often indicated for large goiters with obstructive symptoms (2). Radioiodine, however, is contraindicated in pregnancy, making (3) incorrect. Carbimazole (and PTU) can cause agranulocytosis as a rare but serious adverse effect (4). Thus, statements 1, 2, and 4 accurately reflect Grave's disease management, while (3) is false.

**52.** (a) 1, 2 and 3

Levothyroxine (LT4) is the standard treatment for hypothyroidism, usually taken once daily on an empty stomach (1 and 2). The average full replacement dose in healthy adults is approximately 1.6 μg/kg/day (3). In patients with coronary artery disease (and/or the elderly), high starting doses can precipitate ischemic events, so it is standard practice to begin with a low dose and titrate carefully, making (4) incorrect.

**53.** (d) Semaglutide

Semaglutide is a glucagon-like peptide-1 (GLP-1) receptor agonist primarily administered as a once-weekly subcutaneous injection (though an oral form also exists for certain regimens). Pioglitazone (a thiazolidinedione), metformin (a biguanide), and sitagliptin (a DPP-4 inhibitor) are all given orally. Injectable GLP-1 agonists are especially useful for glycemic control and weight management.

**54.** (b) 1, 2 and 4

Key hallmarks of diabetic retinopathy visible on fundus exam are microaneurysms (the earliest sign), dot-and-blot hemorrhages in the deeper retinal layers, and neovascularization in proliferative disease. Retinal "thickening" (macular edema) is typically confirmed by optical coherence tomography (OCT) rather than directly on the routine ophthalmoscopic exam. Thus, microaneurysms (1), dot-and-blot hemorrhages (2), and neovascularization (4) form the classic triad on exam findings.

**55.** (a) Porphyrias

Porphyrias are a group of metabolic disorders resulting from specific enzymatic defects in the heme synthesis pathway. Depending on the enzyme involved, patients may present with neurovisceral symptoms, photosensitivity, or both. Myelodysplastic syndromes, hemophilias, and plasma cell dyscrasias (e.g., multiple myeloma) involve different pathophysiologies and do not arise from heme biosynthetic enzyme defects.

**56.** (d) Ezetimibe

Ezetimibe selectively inhibits the Niemann-Pick C1-like 1 (NPC1L1) transporter on intestinal enterocytes, preventing cholesterol uptake from the gut lumen. It reduces LDL-cholesterol further when combined with a statin. Atorvastatin (a statin) lowers cholesterol primarily by inhibiting HMG-CoA reductase in the liver. Fenofibrate reduces triglycerides by activating PPAR-α, and metformin is used primarily in type 2 diabetes to reduce hepatic glucose output.

**57.** (c) Intravenous infusion of normal saline

Aggressive hydration with IV normal saline is the first and most crucial step in severe

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hypercalcemia management. It corrects volume depletion and improves renal calcium excretion. Once the patient is adequately rehydrated, additional measures like IV bisphosphonates (e.g., pamidronate or zoledronic acid) are given to reduce bone resorption. Loop diuretics may be used cautiously after volume repletion if needed. Hemodialysis is reserved for refractory or life-threatening cases.

**58.** (b) 1, 2 and 4

A common formula for serum osmolality is:
Osmolality $\approx 2 \times [Na^+ (mEq/L)] + (Glucose\ mg/dL \div 18) + (BUN\ mg/dL \div 2.8)$.
Hence, sodium (1), glucose (2), and blood urea nitrogen (4) are the key laboratory values. Calcium (3) is not included in the standard calculation of serum osmolality.

**59.** (d) Erythema infectiosum

Erythema infectiosum (fifth disease) is caused by Parvovirus B19. The infection typically presents with mild, nonspecific symptoms, followed by bright red "slapped cheek" facial rash in children. In adults, it can manifest with arthralgias or aplastic crises in certain hematologic conditions. Measles (rubeola), rubella (German measles), and chickenpox (varicella) have distinct rash patterns but lack the classic slapped-cheek appearance.

**60.** (b) 1, 2 and 4

Visceral leishmaniasis (kala-azar) is treated by:

1. Pentavalent antimonials (e.g., sodium stibogluconate),
2. Amphotericin B (especially liposomal forms),
3. Paromomycin, and
4. Miltefosine (oral).

Spiramycin is used primarily for toxoplasmosis and is not a standard agent for leishmaniasis. Combining or rotating therapies helps overcome resistance and improves outcomes in endemic areas.

**61.** (a) Toxoplasma gondii

The Sabin-Feldman dye test is a classic serological assay for Toxoplasma gondii. Patient serum is incubated with live Toxoplasma organisms plus complement. If the patient has anti-Toxoplasma antibodies, the parasites become permeable to the dye, leading to characteristic staining. Leishmania donovani, Coxiella burnetii (Q fever), and Trypanosoma cruzi (Chagas disease) require different diagnostic tests.

**62.** (d) Bartonella henselae

Cat-scratch disease occurs when a cat infected with Bartonella henselae transmits the bacterium via scratch or bite. It typically presents as localized lymphadenopathy near the scratch site, sometimes with fever and malaise. Diagnosis often involves serology for Bartonella. Chlamydia trachomatis causes various sexually transmitted or ocular infections, Coxiella burnetii causes Q fever, and Trypanosoma cruzi causes Chagas disease.

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**63.** (b) Snail

Clonorchis sinensis (the Chinese liver fluke) has a life cycle requiring two intermediate hosts. The first host is a freshwater snail, where the parasite undergoes several larval stages. The second host is typically a freshwater fish that humans consume undercooked, acquiring infection. Dogs, sheep, or vegetation are not the initial intermediate host. Correct sanitation and thorough cooking of freshwater fish are essential to prevent Clonorchis infection.

**64.** (c) Loa loa

Loa loa, the African eye worm, causes loiasis. Characteristic "Calabar swellings" are transient edematous areas often near joints, resulting from localized hypersensitivity to migrating worms. The adult worm can also cross the conjunctiva, leading to visible migration in the eye. Onchocerca volvulus causes river blindness, Mansonella perstans is another filarial parasite, and Brugia malayi causes lymphatic filariasis.

**65.** (d) Onchocerca volvulus

Onchocerca volvulus, transmitted by blackflies (Simulium species), causes onchocerciasis or "river blindness." Eye involvement can lead to corneal opacities and characteristic "snowflake" lesions. Chronic infection may also produce

scarring and eventual blindness. Brugia malayi and Mansonella perstans primarily cause lymphatic or subcutaneous manifestations, whereas Loa loa presents differently (e.g., eye worm migration and Calabar swellings).

**66.** (c) 1, 3 and 4

Clonorchis sinensis, Fasciola hepatica, and Opisthorchis felineus are all liver (hepatobiliary) flukes, infecting the biliary tracts of humans or animals. Mansonella perstans, however, is a filarial nematode, not a trematode. Clonorchis and Opisthorchis are linked to undercooked freshwater fish, while Fasciola is often acquired by ingesting watercress or other aquatic plants contaminated with the infective stage.

**67.** (b) Trichinella spiralis

Trichinella spiralis is a nematode acquired by eating undercooked meat (often pork) containing encysted larvae. Both animals and humans can serve as hosts, creating a zoonotic cycle. Taenia saginata is a cestode (tapeworm from cattle), while Fasciola hepatica and Fasciolopsis buski are trematodes (flukes). Thus, Trichinella is the only nematode among the listed parasites with clear zoonotic transmission.

**68.** (c) 1, 3 and 4

BCG (Bacillus Calmette–Guérin) is indeed a live-attenuated vaccine (1) derived from _Mycobacterium bovis_ (3). It is well known for its role in preventing severe forms of tuberculosis in children and is considered highly immunogenic (4), though not 100% protective against pulmonary TB. However, BCG is not administered intramuscularly; rather, it is given intradermally, making statement (2) incorrect.

**69.** (d) 1, 2 and 3

HIV-infected individuals are more susceptible to infections and complications, so preventive immunizations are important. Hepatitis B vaccine, influenza vaccine (annually), and pneumococcal vaccines (both conjugate and polysaccharide forms, depending on guidelines) are recommended. These help reduce the burden of severe disease. Other vaccines, such as Tdap and varicella (in certain conditions), may also be indicated, but 1, 2, and 3 are universally recommended for HIV-positive patients to decrease morbidity.

**70.** (d) 1, 2 and 3

Living at higher latitudes (less intense sun exposure) predisposes to Vitamin D deficiency (1). Darker skin has higher melanin, which reduces UV penetration and endogenous Vitamin D synthesis (2). In established deficiency, sensible exposure to UV light (sunlight) is recommended, alongside dietary adjustments or supplementation (3). All three statements accurately reflect risk factors and management advice for preventing or correcting Vitamin D deficiency.

**71.** (b) Present as large ecchymosis with irregular shapes

Purpura fulminans is a life-threatening hematologic emergency often triggered by severe infections (e.g., meningococcemia) or disseminated intravascular coagulation, leading to widespread vascular thromboses and hemorrhagic infarctions in the skin. Clinically, it appears as large, irregular, hemorrhagic lesions (ecchymoses) that can progress to necrosis. It is not simply non-hemorrhagic bullae, is not purely autoimmune, and asplenia is a risk factor for overwhelming sepsis rather than providing protection.

**72.** (c) Basal cell carcinoma

Basal cell carcinoma (BCC) typically arises in sun-exposed areas, especially in older individuals. The lesions often have a pearly appearance with telangiectatic vessels on the surface and a rolled edge. Although actinic keratoses can occur in sun-damaged skin, they typically appear as rough scaly papules rather than pearly nodules. Squamous cell carcinoma and melanoma each have distinct clinical and dermoscopic features, making the described "pearly papule" with telangiectasia classic for BCC.

**73.** (d) Type 4 hypersensitivity

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Allergic contact dermatitis (e.g., poison ivy dermatitis, nickel allergy) is mediated by delayed-type (Type IV) hypersensitivity. T-lymphocytes recognize antigens presented on skin cells, leading to inflammation and the characteristic eczematous rash. Type I hypersensitivity (immediate) involves IgE and mast cells (as in anaphylaxis). Type II (cytotoxic) and Type III (immune complex) mechanisms are different immunopathologic processes.

**74.** (c) Telogen effluvium

Telogen effluvium is a reversible, non-scarring alopecia characterized by diffuse hair shedding, often triggered by stressors such as acute illness, childbirth, or major surgery. Because the hair follicles are not permanently damaged, regrowth typically occurs once the inciting factor is corrected. Linear scleroderma, cutaneous metastases, and sarcoidosis can all produce scarring (cicatricial) alopecia, where hair follicles are destroyed.

**75.** (d) 2, 3 and 4

The female Sarcoptes scabiei burrows into the skin and primarily spreads the infestation; the short-lived male usually does not cause active transmission. Hence, statement (1) is incorrect. Norwegian (crusted) scabies occurs in immunocompromised or debilitated patients (2), 5% permethrin cream is standard therapy (3), and intensely pruritic lesions that worsen at night or after a hot bath are classic (4).

**76.** (b) Osteoarthritis

Heberden's nodes are bony outgrowths occurring at the distal interphalangeal (DIP) joints, classically seen in osteoarthritis of the hands. Bouchard's nodes affect the proximal interphalangeal (PIP) joints. In rheumatoid arthritis, joint involvement typically spares the DIP joints, while psoriatic arthritis or gout can affect various joints but do not specifically produce Heberden's nodes.

**77.** (c) Glucocorticoids

Prolonged corticosteroid therapy can cause steroid-induced myopathy, typically presenting with proximal muscle weakness. Patients report difficulty climbing stairs, rising from a chair, or raising their arms. This does not typically cause significant muscle pain; rather, it is a painless, progressive weakness. Acetaminophen and antihistamines (e.g., fexofenadine) do not cause such myopathy, and metformin is used for diabetes and does not commonly produce muscle weakness in this pattern.

**78.** (c) Cyclophosphamide

Cyclophosphamide is an alkylating agent used in various autoimmune and malignant conditions. Its metabolite, acrolein, can irritate the bladder epithelium, causing hemorrhagic cystitis. Adequate hydration and co-administration of mesna (2-mercaptoethane sulfonate sodium) help mitigate this toxicity. Leflunomide, mycophenolate, and methotrexate have different toxicity profiles and are not typically associated with hemorrhagic cystitis.

**79.** (c) Ankylosing Spondylitis

Schober's test assesses lumbar flexion, crucial for diagnosing and monitoring ankylosing spondylitis, a seronegative spondyloarthropathy affecting the spine and sacroiliac joints. Limited lumbar mobility is a classic hallmark. The patient stands erect, and two skin marks are placed (usually 10 cm apart). On forward flexion, if the distance does not increase sufficiently, it suggests restricted spinal mobility. Rheumatoid arthritis, lupus, and psoriasis have different clinical evaluations.

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**80.** (b) Long and needle-like

In gout, monosodium urate crystals appear as needle-shaped, negatively birefringent crystals when viewed under polarized light. They often demonstrate yellow coloration when aligned parallel to the axis of polarization. This is in contrast to calcium pyrophosphate crystals (as in pseudogout), which tend to be rhomboid and positively birefringent.

**81.** (a) Rheumatoid arthritis

Anti-citrullinated peptide antibody (ACPA or anti-CCP) has high specificity for rheumatoid arthritis and often appears early in the disease course. It may be present even when rheumatoid

factor is negative. Its strong association aids in diagnosing RA, predicting erosive disease, and guiding early aggressive therapy. Sjögren's syndrome is linked to anti-SSA/SSB, scleroderma involves anti-Scl-70 or anticentromere, and lupus is linked to anti-dsDNA, anti-Smith, etc.

**82.** (c) Anti-histone antibody

Drug-induced lupus (e.g., from hydralazine, procainamide, isoniazid) frequently features anti-histone antibodies, which are present in a high percentage of such cases. The clinical picture resembles systemic lupus but typically lacks major organ involvement such as renal or CNS disease. Anti-centromere is associated with limited scleroderma (CREST), anti-Jo-1 with polymyositis/dermatomyositis, and anti-RNP with mixed connective tissue disease.

**83.** (d) 2, 3 and 4

Lithium is associated with weight gain (not loss), so (1) is incorrect. It can provoke hypothyroidism (2) and sometimes hyperparathyroidism, causing elevated PTH levels (3). Lithium also impairs renal concentrating ability, leading to nephrogenic diabetes insipidus (4). These effects underscore the need for periodic monitoring of thyroid function, calcium, and renal function in patients on long-term lithium therapy.

**84.** (b) 1, 2 and 4

Phenelzine and tranylcypromine are classic, nonselective MAO inhibitors, while moclobemide is a reversible inhibitor of MAO-A. These agents elevate synaptic monoamines by preventing their breakdown. Dosulepin (dothiepin) is a tricyclic antidepressant, which works by inhibiting norepinephrine and serotonin reuptake but does not block monoamine oxidase. Therefore, (1), (2), and (4) are MAO inhibitors, while (3) is not.

**85.** (c) 1, 3 and 4 (Escitalopram, Fluoxetine, Sertraline)

Selective serotonin reuptake inhibitors (SSRIs) increase the level of serotonin in the synaptic cleft by blocking its reabsorption into presynaptic neurons. Escitalopram, fluoxetine, and sertraline are all classic SSRIs. Amitriptyline is a tricyclic antidepressant (TCA), which, while it does affect serotonin, also strongly blocks norepinephrine reuptake and has additional receptor effects that distinguish it from SSRIs.

**86.** (a) 1, 2 and 3 (Auditory hallucinations, Thought broadcasting, Delusional perceptions)

Schneider's First Rank Symptoms of schizophrenia include prominent auditory hallucinations (especially discussing or commenting voices), delusions of control, thought broadcasting, thought insertion/withdrawal, and delusional perception. Delirium is an acute confusional state with altered consciousness, not classified under First Rank Symptoms of schizophrenia. Recognizing these hallmark symptoms is important in diagnosing and differentiating schizophrenia from other psychotic or organic disorders.

**87.** (b) 1, 2 and 4

Wernicke-Korsakoff syndrome is most commonly associated with thiamine (vitamin B1) deficiency in chronic alcoholism but may also occur in prolonged malnutrition, malabsorption, or prolonged vomiting. Its acute triad (Wernicke's) is ophthalmoplegia, ataxia, and confusion; pathology typically shows lesions in mammillary bodies and around the third ventricle. Over time, patients can develop the Korsakoff component with profound memory deficits. Vitamin B12 deficiency is not the culprit here, making statement (3) incorrect.

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**88.** (a) 1, 2 and 3

Certain forms of Alzheimer's disease have an autosomal dominant inheritance (e.g., mutations in APP, PSEN1, PSEN2). Huntington's disease (expanded CAG repeats in the HTT gene) and Wilson's disease (ATP7B gene, autosomal recessive) can also cause progressive neuropsychiatric decline. "Punch-drunk" syndrome (chronic traumatic encephalopathy) is linked to repetitive head injuries (e.g., in boxers or American football players) rather than a genetic defect.

**89.** (d) 1, 2 and 3

Classic mood stabilizers include lithium, valproate (valproic acid), and lamotrigine, among others. Lithium has long been used for both acute mania and prophylaxis in bipolar disorder, while valproate and lamotrigine also serve critical roles in preventing mood episodes. Other agents (e.g., carbamazepine) can be used. Combining therapy decisions often depends on the polarity of symptoms (manic vs. depressive), side-effect profiles, and comorbidities.

**90.** (d) 1, 2 and 3

Acetaminophen (paracetamol) has minimal effects on platelet function, unlike NSAIDs, so it does not prolong bleeding time. It is primarily metabolized in the liver; in overdose, a toxic intermediate (NAPQI) accumulates, causing hepatocellular injury or necrosis. At therapeutic doses, it is a safe, effective, non-narcotic (non-opioid) analgesic and antipyretic, widely used in mild to moderate pain and fever.

**91.** (d) 1, 2, 3 and 4

Secondary (AA) amyloidosis can result from chronic infections (e.g., TB, chronic osteomyelitis) or chronic inflammatory conditions (e.g., rheumatoid arthritis), leading to deposition of serum amyloid A–derived fibrils. Multiple myeloma often leads to AL amyloidosis (light-chain related). Thus, all four listed conditions may produce acquired systemic amyloidosis through different pathways of pathological protein deposition.

**92.** (b) 1, 2 and 4

After a meal (postprandial), insulin rises, facilitating glucose uptake into muscle and adipose tissue (1). Skeletal muscle is a major site of glucose disposal under insulin influence (2). The brain does not require insulin for glucose uptake, making statement (3) incorrect. During exercise, glucagon typically increases to maintain blood glucose, promoting glycogenolysis and gluconeogenesis (4).

**93.** (c) 1 and 2 (Insulin and Amylin)

Pancreatic beta cells secrete both insulin (the main anabolic hormone for glucose uptake) and amylin (also called islet amyloid polypeptide), which helps modulate gastric emptying and satiety. Alpha cells produce glucagon, and delta cells secrete somatostatin. Hence, only insulin and amylin are synthesized in beta cells.

**94.** (b) 2, 3 and 4

ARDS typically unfolds in phases:

1. Exudative phase: ~first week (up to ~day 7).
2. Proliferative phase: ~day 7 to ~day 14 or 21, marked by proliferation of type II pneumocytes (2).
3. Fibrotic phase can follow if injury persists.

Low tidal volume ventilation (≈6 mL/kg) reduces ventilator-induced lung injury and improves outcomes (3). $PaO_2/FiO_2$ ≤100 mm Hg defines severe ARDS (4). Statement (1) incorrectly places the exudative phase starting at day 7.

**95.** (c) 1, 2 and 4

OPIDN is a delayed neuropathy arising a couple of weeks after certain organophosphate poisonings (particularly those inhibiting "neuropathy target esterase," e.g., triorthocresyl phosphate). It primarily manifests as a motor polyneuropathy, but may also have some sensory involvement—therefore statement (3) is oversimplified. Therapy is mostly supportive; no definitive antidote reverses established nerve damage. Physiotherapy can help maintain muscle function, limiting contractures and deformities (4).

**96.** (d) 1, 2, 3 and 4

Paracetamol (acetaminophen) overdose produces a toxic metabolite (NAPQI) that depletes glutathione and injures hepatocytes (1). N-acetylcysteine (NAC) replenishes glutathione, preventing or limiting liver damage—best if given within 8 hours (3). Because NAC is so effective, guidelines often recommend starting it in suspected high-risk overdoses (2). Methionine can also donate sulfhydryl groups

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but is considered less effective and is usually reserved when NAC is unavailable (4).

**97.** (b) Night feeding is important for maintaining prolactin reflex.

Prolactin stimulates the production of milk by the alveolar cells, whereas oxytocin, secreted from the posterior pituitary, triggers milk ejection ("let-down reflex"). Night-time feeds help sustain prolactin secretion, supporting milk supply. Thus, statement (b) is correct. Statements (a) and (c) swap prolactin's and oxytocin's roles, and (d) is incorrect because oxytocin comes from the posterior pituitary, not the anterior.

**98.** (c) Draws a circle

The developmental progression for drawing/copying shapes typically begins with scribbling, then drawing a circle (around 2–3 years), next copying a circle (around 3 years), and later a cross (around 4 years). "Draws a circle" usually precedes "copies a circle," and both precede drawing or copying a cross. Because a cross is a more complex shape requiring finer coordination, children master circle-making earlier, making (c) the earliest among the listed.

**99.** (b) 15% over the first 8 hours

In pediatric (and adult) hypertensive emergencies, overly rapid BP reduction can compromise organ perfusion. Generally, guidelines recommend lowering BP gradually by about 20–25% in the first day, with an initial target of ~10–15% in the early hours. A common approach is up to ~15% reduction over the first 8 hours, then further controlled reduction as needed. Drastic, immediate reductions (e.g., 10–15% within the first hour) pose risks of ischemic complications.

**100.** (c) $\geq$ 40 per minute

According to Integrated Management of Childhood Illness (IMCI) guidelines, "fast breathing" for a child aged 12 months up to 5 years is a respiratory rate $\geq$40 breaths per minute. In younger infants 2–12 months, $\geq$50 breaths per minute is used, and in infants <2 months, $\geq$60 per minute. Since the question specifically asks about a 2-year-old, the appropriate threshold is $\geq$40 breaths per minute.

**101.** (b) 1, 2 and 4

Immediate hyperkalemia management includes IV calcium gluconate (to stabilize the cardiac membrane), insulin with glucose (to drive potassium intracellularly), and sometimes IV sodium bicarbonate if acidosis is present. Nebulized salbutamol also helps shift potassium intracellularly, but ipratropium bromide is not typically employed for this purpose. Hence, 1, 2, and 4 are correct interventions for acute hyperkalemia.

**102.** (b) Hyperkalemia

Salbutamol (albuterol) when given by nebulization stimulates $\beta_2$-adrenergic receptors, promoting potassium movement into cells and reducing serum potassium levels. Although its effect can be modest compared to insulin/dextrose, salbutamol can be an adjunct in acute hyperkalemia. It does not correct sodium or magnesium disturbances in this manner.

**103.** (b) 1 and 3

Under India's WIFS (Weekly Iron and Folic Acid Supplementation) program for adolescents (10–19 years), the standard supervised dose is 100 mg elemental iron + 500 μg folic acid once weekly (1). Deworming with albendazole is recommended biannually (every 6 months) to reduce parasitic infestations that worsen anemia (3). Option (2) is not the standard dose in this program, and once-yearly deworming (4) is less common than twice-yearly.

**104.** (a) 1, 2 and 3

IMNCI guidelines emphasize returning immediately if a child cannot drink/breastfeed (1), or if new/worsening fast/difficult breathing arises—indicating possible pneumonia (2). Blood in stool (3) is also a red flag for dysentery or invasive infection. Conjunctivitis with measles (4) is relatively common and not by itself a trigger for immediate return unless severe or with other danger signs. So statements 1, 2, and 3 are correct.

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**105.** (b) 1, 2 and 3

The Parkland formula calculates total fluid replacement (4 mL × body weight in kg × %TBSA burned) for the first 24 hours (1, 2). In children, maintenance fluids must be added separately for normal metabolic requirements (3). Classic teaching is to give half the Parkland-calculated volume in the first 8 hours from time of burn (not 6 hours), then the remaining half over the subsequent 16 hours. Hence statement (4) is incorrect.

**106.** (b) Iron

Whole bowel irrigation (WBI) involves administering large volumes of a polyethylene glycol solution to flush the entire GI tract. It is particularly helpful when toxic substances (e.g., iron tablets, sustained-release medications, drug packets) cannot be bound by activated charcoal or removed effectively by gastric lavage. Iron overdose can cause severe toxicity, and WBI helps remove unabsorbed tablets from the gut. Alcohol, kerosene, or organophosphates are absorbed differently and do not routinely warrant WBI.

**107.** (c) 4 mg

After a pregnancy affected by a neural tube defect (NTD), the recommended high-dose folic acid prophylaxis is 4 mg daily, starting ideally before conception and continuing into early pregnancy. This is much higher than the usual prophylactic dose of 400 μg/day for women without a history of NTD-affected pregnancies. Adequate folate significantly reduces the recurrence risk of neural tube defects.

**108.** (c) 1, 3 and 4

Non-invasive prenatal screening (NIPS), also called NIPT, analyzes cell-free fetal DNA in maternal blood (1). It typically begins from around 10 weeks of gestation or later, so saying "before 10 weeks" is incorrect. It has a very high negative predictive value (around or above 98% for trisomy 21) (3). Because NIPS is a screening, not a diagnostic test, any positive finding requires confirmatory invasive testing such as chorionic villus sampling or amniocentesis (4).

**109.** (d) Either parent is a carrier of translocation between two chromosome 21

When a Robertsonian 21q21q translocation exists in a parent, every gamete they produce carries extra chromosome 21 material, making all offspring inherit an extra 21—thus 100% risk of Down syndrome. Ordinary balanced translocations involving 14;21 or other combinations carry a variable risk but not 100%. If either parent specifically has 21;21 translocation, the chance of Down syndrome in each child is essentially guaranteed.

**110.** (a) 1 and 3 (Angelman syndrome, Prader–Willi syndrome)

Angelman syndrome and Prader–Willi syndrome both involve imprinting errors on chromosome 15: the outcome depends on whether the maternal or paternal gene regions are deleted or mutated. Williams syndrome is caused by a deletion on chromosome 7 (not imprinting-based), and DiGeorge syndrome (22q11.2 deletion) likewise is not an imprinting defect.

**111.** (b) Chlorpromazine

Chlorpromazine is a typical antipsychotic (phenothiazine) that can impair thermoregulatory mechanisms in the hypothalamus, predisposing to hypothermia (especially in overdose or under certain conditions). While alcohol can contribute to hypothermia through peripheral vasodilation and suppressed shivering reflex, among these listed options, chlorpromazine overdose is most directly associated with interfering in the body's temperature regulation set-point. Digoxin and iron poisonings typically present with other specific toxicities, not primarily hypothermia.

**112.** (a) Only one pair

Among the listed pairs, only "Brown → Chloroquine" is reasonably recognized. Phenazopyridine most often causes orange or reddish urine, whereas amitriptyline is known

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for turning urine green or blue rather than red–orange. Cephalosporins are not commonly linked to a pink discoloration. Hence, only one pair is correct, which is pair 2.

**113.** (b) Only two pairs

Lithium toxicity can indeed prolong the PR interval and cause AV conduction changes. Amiodarone may prolong QTc (though it carries a relatively lower risk of torsades de pointes compared to other QT-prolonging drugs). Kerosene ingestion does not typically produce a wide QRS (which is more characteristic of tricyclic antidepressant overdose). Organophosphates generally cause bradycardia rather than tachycardia (due to cholinergic excess). Thus, only pairs 1 and 2 are correct.

**114.** (b) Secondary apnea

In primary apnea, a newborn typically resumes breathing when stimulated (tactile or gentle airway stimulation). If the baby fails to initiate respirations with stimulation, this indicates they have progressed to secondary apnea, a more dangerous state requiring immediate intervention (e.g., ventilation support). Tertiary apnea and "cardiorespiratory arrest" are not commonly used terms in neonatal resuscitation guidelines; the critical distinction is that in secondary apnea, the infant no longer responds to stimulation alone.

**115.** (b) B

In primary apnea, the baby can still respond to tactile stimulation (Yes). There is often an initial fall in heart rate (and usually some decline in tone), while blood pressure may remain relatively normal in that early phase. If stimulation successfully restarts breathing, the condition is labeled primary apnea. In condition "B," the baby responds to touch ("Yes"), but HR is falling, and tone is decreasing—consistent with primary apnea.

**116.** (d) 3 and 4 only

Human milk is actually about 87–90% water, making statement (1) incorrect (75% is too low). Breast milk is rich in taurine and cysteine (so statement (2) is false). It does contain significant levels of essential fatty acids, including omega-6 (linoleic) and omega-3 (linolenic); the question's phrasing says "omega 2" but typically this refers to the essential fatty acid families (3). High lactose indeed enhances calcium absorption (4). Hence only statements (3) and (4) are correct.

**117.** (b) 2, 3 and 4

Good attachment includes:

1. Mouth wide open (covering much of the areola),
2. Chin pressing against the breast,
3. Lower lip everted (flanged outward).

While a baby's nose often stays close to the breast, the widely cited signs emphasize the baby's mouth and chin alignment with the breast tissue and everted lips. "Nose at the level of the nipple" can be helpful guidance, but the key recognized features for correct latch are 2, 3, and 4.

**118.** (c) 66%

Developmental Quotient = (Developmental Age ÷ Chronological Age) × 100. By 6 years, children can typically recite small rhymes or short stories; reciting one's full name is usually mastered by around 4 years. Thus, in the language domain, his developmental level approximates about 4 years of ability while his actual age is 6, yielding $(4 \div 6) \times 100 \approx 66\%$.

**119.** (d) 3 and 4

Hepatitis B vaccine is indeed recommended intramuscularly, not subcut, and giving it IM does not reduce its efficacy—so statement (1) is incorrect. The maximum time for MMR after reconstitution is usually up to 6–8 hours if refrigerated, not strictly 30 minutes—so (2) is also incorrect. Maternal antibodies do not hamper BCG's cell-mediated response (3). In many national programs (e.g., India), whole-cell DTwP is still preferred for primary schedules over acellular DTaP (4).

**120.** (a) It might compromise uptake of vaccine

Active diarrhea (particularly moderate to severe) can interfere with the intestinal absorption

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and immune response to orally administered rotavirus vaccine, diminishing its effectiveness. While intussusception is a known (though rare) adverse event linked to rotavirus vaccines, the immediate reason to delay in a child actively having diarrhea (or significant vomiting) is that the vaccine may not be retained or adequately taken up by the gut. Therefore, (a) is the best explanation among the choices given.

END

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# QUESTION PAPER 2023

1. Thickened ventricular wall with normal diastolic function is a feature of
   (a) hypertrophic cardiomyopathy
   (b) restrictive cardiomyopathy
   (c) endomyocardial fibrosis
   (d) athlete's heart

2. In which of the following cases does paradoxical splitting occur?
   1. Severe aortic stenosis
   2. Right bundle branch block
   3. Right ventricular pacing
   4. Hypertrophic obstructive cardiomyopathy

   Select the correct answer using the code given below.
   (a) 1, 2 and 3
   (b) 1, 2 and 4
   (c) 1, 3 and 4
   (d) 2, 3 and 4

3. A patient with peripheral edema has the following findings on clinical examination :
   A soft systolic murmur at the lower left sternal border with raised JVP showing prominent C-V wave. The murmur increases in intensity on deep inspiration The most likely valvular abnormality is
   (a) ventricular septal defect
   (b) mitral regurgitation
   (c) tricuspid regurgitation
   (d) mitral valve prolapse

4. Kussmaul's sign is a clinical feature of
   (a) constrictive pericarditis
   (b) hypertrophic obstructive cardiomyopathy
   (c) anteroseptal myocardial infarction
   (d) dilated cardiomyopathy

5. A patient has a cardiac murmur that is best heard at the right second intercostal space. It increases with expiration. Also, the murmur reduces in intensity during sustained handgrip but increases in intensity on inhalation of amyl nitrite. The likely lesion is
   (a) ventricular septal defect
   (b) aortic stenosis
   (c) hypertrophic obstructive cardiomyopathy
   (d) mitral regurgitation

6. In the modified Duke criteria for infective endocarditis, which one of the following is not a major criterion?
   (a) New partial dehiscence of prosthetic valve
   (b) Positive blood culture
   (c) Roth's spots
   (d) New valvular regurgitation

7. Which one of the following diseases affects predominantly large arteries?
   (a) Granulomatosis with polyangiitis
   (b) Polyarteritis nodosa
   (c) Giant cell arteritis
   (d) Eosinophilic granulomatosis with polyangiitis

8. Osborn waves in ECG show prolonged repolarization with a distinctive convex elevation of the 'J' point. These waves are associated with
   (a) systemic hypothermia
   (b) acute pericarditis
   (c) acute myocarditis
   (d) Brugada syndrome

9. A decline in total lung capacity to less than 80% of patient's predictive value is an indication of
   (a) restrictive lung disease
   (b) obstructive lung disease
   (c) pulmonary artery hypertension
   (d) pulmonary embolism

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**10.** A 28-year male is suspected of having hypertrophic obstructive cardiomyopathy (HOCM). Which of the following statements are likely to be true on his examination?
1. Maneuvers that decrease LV preload will cause the murmur to intensify.
2. Maneuvers that decrease LV afterload will cause decrease in intensity of murmur.
3. Murmur of HOCM becomes softer with passive leg raising.
4. Murmur of HOCM becomes louder with squatting.

Select the correct answer using the code given below.
(a) 1 and 3
(b) 2 and 3
(c) 2 and 4
(d) 1 and 4

**11.** A 56-year male, chronic heavy smoker, presented with breathlessness. On examination, pulse : 96/minute, BP : 112/70 mm Hg and a pansystolic murmur is showing Carvallo's sign with murmur getting louder on deep inspiration. Which one of the following statements is true regarding examination of JVP in him?
(a) V wave is attenuated.
(b) C wave is attenuated and V wave is accentuated.
(c) V wave and C wave merge.
(d) V wave and C wave merge and Y descent is blunted.

**12.** Which one of the following is a manifestation of vascular phenomenon in modified Duke criteria?
(a) Osler's node
(b) Roth's spots
(c) Janeway's lesions
(d) Glomerulonephritis

**13.** The volume of air remaining in the lungs after a normal expiration is called
(a) expiratory residual volume
(b) functional residual capacity
(c) residual volume
(d) vital capacity

**14.** The investigation of choice for early follow-up in patients treated for anti-H. pylori drugs is
(a) urea breath test
(b) rapid urease test
(c) stool H. pylori antigen test
(d) serology for H. pylori

**15.** The most common non-pancreatic site for tumour distribution in Zollinger-Ellison syndrome is
(a) duodenum
(b) ovaries
(c) stomach
(d) liver

**16.** Which of the following are the risk factors for the acquisition of hepatitis C infection?
1. Faeco-oral transmission
2. Intravenous drug abuse
3. Vertical transmission
4. Sharing toothbrush and razors

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**17.** The most common cause of shock in severe acute pancreatitis (SAP) is
(a) hypovolemic shock resulting from third space loss
(b) septic shock resulting from infected pancreatic necrosis
(c) cardiogenic shock resulting from SIRS
(d) abdominal compartment syndrome

**18.** The most common causative agent for spontaneous bacterial peritonitis is
(a) Escherichia coli
(b) Enterococcus sp.
(c) Staphylococcus aureus
(d) Streptococcus viridans

**19.** The serologic marker detectable during 'window' period of hepatitis B infection is
(a) anti-HBsAb

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(b) anti-HBc IgG
(c) anti-HBc IgM
(d) HBeAg

**20.** A 14-year boy came with chronic diarrhoea and malnutrition. The physician suspected celiac disease. Which of the following are correct in his diagnostic workup?
1. Presence of IgA antiendomysial antibody
2. Absence of reduced height of villi on intestinal biopsy
3. Increased lymphocytes in lamina propria in small intestine biopsy
4. Absence of tTG antibody in serum

Select the correct answer using the code given below.
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**21.** Which of the following statements are correct for the treatment of chronic hepatitis B with pegylated interferon (PEG-IFN)?
1. PEG-IFN is poorly tolerated drug as compared to nucleoside analogues.
2. Resistance to treatment with PEG-IFN is common than nucleoside analogues.
3. PEG-IFN is not useful in patients of cirrhosis.
4. PEG-IFN is administered every week for 48 weeks.

Select the correct answer using the code given below:
(a) 1, 3 and 4
(b) 1, 2 and 3
(c) 2 and 4
(d) 1 and 3 only

**22.** Which of the following are recommended for management of tumour lysis syndrome?
1. Urinary alkalinization
2. Intravenous fluids
3. Rasburicase
4. Febuxostat

Select the correct answer using the code given below.
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**23.** Focal seizures may be associated with which of the following?
1. Jacksonian march
2. Todd's paralysis
3. Epilepsia partialis continua

Select the correct answer using the code given below.
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**24.** Typical absence seizures are characterized by
(a) abrupt 3 Hz spike-and-slow wave discharges on EEG
(b) postictal confusion in children
(c) multifocal structural abnormalities of brain
(d) less responsiveness to anticonvulsants as compared to atypical absence seizures

**25.** Which of the following are contraindications to thrombolysis in acute ischemic stroke?
1. Recent head injury
2. Recent MI
3. Hypertension 150/100 mm Hg
4. GI bleeding in last 3 weeks

Select the correct answer using the code given below.
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

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**26.** Which one of the following distinguishes axonal degeneration from segmental demyelination on electrophysiological studies?
(a) Distal latency is normal in axonal degeneration and prolonged in segmental demyelination.
(b) Conduction velocity is slow in axonal degeneration and normal in segmental demyelination.
(c) Conduction block is present in axonal

degeneration and absent in segmental demyelination.
(d) Temporal dispersion is prominent in axonal degeneration and absent in segmental demyelination.

**27.** Which one of the following drugs helps to maintain abstinence by reducing craving for alcohol?
(a) Apomorphine
(b) Acamprosate
(c) Atropine
(d) Azathioprine

**28.** The BCR-ABL 1 oncoprotein exhibits constitutive activity of which one of the following enzymes?
(a) Alanine kinase
(b) Tyrosine kinase
(c) Leucine kinase
(d) Cysteine kinase

**29.** Imatinib, Dasatinib, Nilotinib and Ponatinib are examples of which class of drugs?
(a) Interferons
(b) Monovalent antibodies
(c) Bivalent antibodies
(d) Tyrosine kinase inhibitors

**30.** Helicobacter pylori infection is associated with the development of which one of the following lymphoid malignancies?
(a) Burkitt's lymphoma
(b) Hodgkin's lymphoma
(c) Mucosa-associated lymphoid tissue lymphoma
(d) Adult T-cell leukemia/lymphoma

**31.** The Duffy antigen system serves as receptor for which one of the following protozoal parasites?
(a) Giardia lamblia
(b) Plasmodium vivax
(c) Entamoeba histolytica
(d) Balantidium coli

**32.** With regard to transfusion therapy, cryoprecipitate is a rich source of which of the following?
1. Fibrinogen
2. Clotting factor VIII
3. Clotting factor IX
4. von Willebrand factor

Select the correct answer using the code given below.
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**33.** Which of the following viruses can be transmitted via transfusion of infected blood?
1. Hepatitis B virus
2. Hepatitis C virus
3. Human immunodeficiency virus
4. Parvovirus B19

Select the correct answer using the code given below.
(a) 1 and 3 only
(b) 2 and 4 only
(c) 1, 2 and 3 only
(d) 1, 2, 3 and 4

**34.** Which one of the following correctly describes the mode of inheritance of haemophilia B?
(a) Autosomal dominant
(b) Autosomal recessive
(c) X-linked dominant
(d) X-linked recessive

**35.** Which one of the following conditions characteristically may present with a triad of haemolysis, pancytopenia and venous thrombosis?
(a) Glucose-6-phosphate dehydrogenase deficiency
(b) Hereditary spherocytosis
(c) Haemolytic uremic syndrome
(d) Paroxysmal nocturnal haemoglobinuria

**36.** Which one of the following is associated with low MCV of red blood cells?
(a) Thalassemia
(b) Vitamin B12 deficiency anaemia

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(c) Folate deficiency anaemia
(d) Sickle cell anaemia

**37.** GnRH deficiency with hyposmia is typically seen in
(a) Kallmann syndrome
(b) Bardet-Biedl syndrome
(c) Prader-Willi syndrome
(d) Wallenberg syndrome

**38.** Iodine has complex effects on thyroid function. Very high concentrations of iodine inhibit thyroid hormone synthesis and release. This effect is known as
(a) Wolff-Chaikoff effect
(b) Jod-Basedow effect
(c) reverse Wolff-Chaikoff effect
(d) reverse Jod-Basedow effect

**39.** Consider the following pharmacological agents:
1. Propranolol
2. Sodium ipodate
3. Propylthiouracil
4. Liothyronine

Which of the above can be used for the treatment of thyrotoxic crisis?
(a) 3 only
(b) 1 and 2 only
(c) 1, 2 and 3
(d) 2, 3 and 4

**40.** Consider the following pharmacological agents:
1. Liothyronine
2. Levothyroxine
3. Carbimazole
4. Sodium ipodate

Which of the above may be included in the treatment of myxoedema coma?
(a) 1 only
(b) 1 and 2
(c) 2 and 3
(d) 3 and 4

**41.** Which one of the following insulin preparations has the longest effective duration of action?
(a) Detemir
(b) Glargine
(c) NPH
(d) Degludec

**42.** Functioning pituitary adenoma most commonly arises from which one of the following cells?
(a) Somatotroph
(b) Lactotroph
(c) Corticotroph
(d) Thyrotroph

**43.** Low serum thyroglobulin levels are seen in
(a) thyrotoxicosis factitia
(b) subacute thyroiditis
(c) Graves' disease
(d) toxic multinodular goitre

**44.** A 45-year-old male presented with polyuria, polydipsia and polyphagia for the last 3 months. His fasting plasma glucose is 106 mg/dL and random blood glucose is 220 mg/dL. Which one of the following statements is correct regarding his diagnosis?
(a) He has impaired glucose tolerance (IGT).
(b) He has definitive diagnosis of diabetes mellitus.
(c) He does not have diabetes mellitus.
(d) Diagnosis of diabetes mellitus is indeterminate as HbA1c value is not provided.

**45.** Which one of the following statements is true regarding the use of SGLT2 inhibitor in management of diabetes mellitus?
(a) They are used in type-1, type-2 and pancreatogenic forms of diabetes mellitus.
(b) They cause increase in blood pressure by 3–6 mm Hg and hence avoided in hypertensive patients.
(c) Their glucose-lowering effect is dependent on insulin secretion and insulin sensitivity.
(d) Euglycemic diabetic ketoacidosis may occur during treatment if there is a concurrent illness.

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**46.** A 50-year lady, who is a known case of rheumatoid arthritis, presents with obesity, moon facies, abdominal striae and hypertension. Overnight dexamethasone suppression test shows serum cortisol is less than 50 nmol/L, serum ACTH is less than 1·1 pmol/L. The adrenal imaging and brain CT/MRI imaging studies are unremarkable. The likely diagnosis is
(a) Cushing's disease
(b) ectopic ACTH-secreting tumour
(c) exogenous glucocorticoid use
(d) adrenal adenoma

**47.** A 27-year lady underwent thyroidectomy for thyroid carcinoma. Post-operatively she started developing muscle cramps, perioral and peripheral paresthesia, and carpopedal spasm. Which one of the following interventions will be appropriate for this patient?
(a) Nerve conduction velocity in both upper and lower limbs and to administer methylcobalamin
(b) EMG of both lower limbs and to administer oral prednisolone
(c) Measure of serum ionized calcium and to administer IV calcium gluconate
(d) Measure of serum bicarbonate and to administer IV bicarbonate

**48.** Which one of the following is an example of hypogonadotropic hypogonadism?
(a) Kallmann's syndrome
(b) Klinefelter's syndrome
(c) Turner's syndrome
(d) Cryptorchidism

**49.** A tall thin adolescent boy is found to have gynaecomastia and small testes. His blood testosterone level is undetectable, and serum FSH and LH levels are elevated. Which one of the following is the likely karyotype pattern?
(a) 46 XY
(b) 45 XO
(c) 47 XXY
(d) 21 Trisomy

**50.** Which of the following antidiabetic drugs may cause weight gain?
1. Glimepiride
2. Pioglitazone
3. NPH insulin
4. Sitagliptin

Select the correct answer using the code given below.
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**51.** Which of the following statements is/are correct for obesity?
1. Adiponectin levels are reduced in obesity.
2. Orlistat is a reversible inhibitor of lipase used for the treatment of obesity.
3. Liraglutide used for T2DM management can cause weight gain and not recommended in obese patients with T2DM.
4. Bariatric surgery is recommended in obese patients with BMI 30 $kg/m^2$ for long-term benefits.

Select the correct answer using the code given below.
(a) 1, 2 and 4
(b) 1 and 2 only
(c) 2, 3 and 4
(d) 1 only

**52.** Which of the following drugs are effective in preventing uric acid nephropathy in patients receiving chemotherapy?
1. Probenecid
2. Forced saline diuresis
3. Rasburicase
4. Acetazolamide

Select the correct answer using the code given below.
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

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**53.** Primaquine destroys hypnozoites of Plasmodium vivax for radical cure in which one of the following?
(a) Liver
(b) Peripheral blood
(c) Brain
(d) Bone marrow

**54.** HIV-associated neurocognitive disorder (HAND) includes which of the following?
1. Asymptomatic neurocognitive disorder
2. Minor neurocognitive disorder
3. HIV-associated dementia

Select the correct answer using the code given below.
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**55.** Consider the following statements with regard to cysticercosis :
1. It may present as personality change.
2. Subcutaneous nodule may be excised for histology.
3. Cerebral signs commonly do not occur until the larvae die, 5–20 years later.
4. Praziquantel can be given for 10 days.

Which of the statements given above are correct?
(a) 1 and 4 only
(b) 2 and 3 only
(c) 1, 2 and 3 only
(d) 1, 2, 3 and 4

**56.** Consider the following statements with regard to strongyloidiasis:
1. It parasitizes the mucosa of upper part of small intestine.
2. Larva currens is fast-moving transient rash seen across abdomen and buttocks.
3. Ivermectin is not an effective treatment.
4. Systemic strongyloidiasis is seen in immune competent state.

Which of the statements given above are correct?
(a) 1 and 2
(b) 2 and 3 only
(c) 2, 3 and 4
(d) 1 and 4

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**57.** Consider the following statements with regard to cutaneous larva migrans :
1. It is one of the commonest linear lesions seen in travellers.
2. It may be associated with a recent visit to a beach.
3. It is non-pruritic.
4. Track moves across the skin at a rate of 2–3 cm/day.

Which of the statements given above are correct?
(a) 1, 2 and 3
(b) 1, 3 and 4
(c) 1, 2 and 4
(d) 2, 3 and 4

**58.** Consider the following statements with regard to giardiasis :
1. Stools should be examined for cysts at 2–3 days interval for its diagnosis.
2. Colonoscopy aspirate gives the highest diagnostic yield.
3. Infection usually occurs by ingesting contaminated water.
4. Giardia has a flagellate trophozoite form.

Which of the statements given above are correct?
(a) 1 and 3 only
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2 and 4 only

**59.** Type-2 necrotizing fasciitis is caused by
(a) Group A Streptococcus
(b) Vibrio vulnificus
(c) Clostridium septicum
(d) Staphylococcus aureus

**60.** Which of the following treatments for a pregnant lady who has been exposed to a patient of chicken pox are correct?
1. Varicella-zoster immune globulin
2. Varicella-zoster vaccine
3. Acyclovir
4. Prednisolone

Select the correct answer using the code given below:
(a) 1, 2 and 4
(b) 2 and 3

(c) 1 and 3 only
(d) 1, 3 and 4

**61.** Which of the following drugs is/are useful in the treatment of Listeria monocytogenes infection?
1. Ceftriaxone
2. Gentamicin
3. Ampicillin
4. Sulfamethoxazole

Select the correct answer using the code given below.
(a) 1 only
(b) 2, 3 and 4 only
(c) 1 and 2 only
(d) 1, 2, 3 and 4

**62.** Which of the following abnormalities occur from vitamin D deficiency in children?
1. Craniotabes
2. Bossing of frontal and parietal bones
3. Muscle hypotonia
4. Shrinking of epiphysis at the lower end of radius

Select the correct answer using the code given below.
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**63.** Which one of the following is a cause of relative erythrocytosis?
(a) High altitude
(b) Cardiorespiratory disease
(c) High-affinity haemoglobins
(d) Diuretics

**64.** Which of the following statements are correct regarding UTI?
1. Urine is an excellent culture medium for bacteria.
2. Atrophic urethritis in post-menopausal women is a risk factor.
3. Antibiotics are recommended in all cases of asymptomatic bacteriuria.
4. Certain strains of E. coli have a particular propensity to invade urinary tract.

Select the correct answer using the code given below.
(a) 1 and 4 only
(b) 1, 2 and 3
(c) 2, 3 and 4
(d) 1, 2 and 4

**65.** Which of the following statements are correct regarding scorpion stings?
1. Scorpion injects venom from a stinger on their tail.
2. Most stings are painful, but relatively harmless.
3. Anticholinergics can be used if antivenom is unavailable.

Select the correct answer using the code given below.
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**66.** Which of the following statements are correct regarding Kyasanur forest disease?
1. It is commonly seen in North-Eastern States of India.
2. Monkeys act as reservoir of the disease.
3. Transmission happens through tick bite.
4. Inactivated vaccine is available for its prevention.

Select the correct answer using the code given below.
(a) 1 and 4 only
(b) 2 and 3 only
(c) 1, 2 and 4
(d) 2, 3 and 4

**67.** Which of the following statements are correct regarding brucellosis?
1. Fever may develop into an undulating pattern that persists for weeks.
2. Associated musculoskeletal symptoms are a feature of the disease.
3. Brucellae behave as facultative intracellular parasites.

Select the correct answer using the code given below.
(a) 1 and 2 only
(b) 2 and 3 only

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(c) 1 and 3 only
(d) 1, 2 and 3

**68.** A 60-year-old diabetic female presents with acute myocardial infarction. ECG changes include ST elevation greater than 1 mm in lead aVR. The likely localization of thrombosis is in
(a) right coronary artery
(b) distal LAD
(c) left circumflex artery
(d) left main or proximal LAD

**69.** Which one of the following antidiabetic drugs is recommended for weight loss in obese patients?
(a) Glimepiride
(b) Liraglutide
(c) Sitagliptin
(d) Insulin

**70.** Consider the following statements regarding inflammatory bowel disease:
1. Ulcerative colitis (UC) involves terminal ileum and rarely causes proctitis.
2. Cobblestone appearance of bowel is seen in Crohn's disease.
3. Skip lesions are a characteristic of ulcerative colitis but never seen in Crohn's disease.
4. Ulcerative colitis is more common in smokers than non-smokers.

Which of the statements given above is/are correct?
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 3 and 4 only
(d) 2 only

**71.** Which of the following are typical physical findings in pericardial effusion?
1. Raised JVP
2. Hypotension
3. Oliguria
4. Water hammer pulse

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1,3 and 4
(d) 2 ,3 and 4

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**72.** Which of the following conditions can produce a third heart sound ($S_3$) on auscultation?
1. Young age
2. Pregnancy
3. Left ventricular failure
4. Mitral stenosis

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**73.** Which of the following statements are true about PR interval?
1. It denotes atrial depolarization.
2. Normal duration is 0.12 second–0.20 second.
3. Prolongation denotes impaired AV nodal conduction.
4. A short PR interval occurs in WPW syndrome.

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1,3 and 4
(d) 2 ,3 and 4

**74.** Which one of the following is the drug of choice for the treatment of schistosomiasis?
(a) Doxycycline
(b) Praziquantel
(c) Albendazole
(d) Ivermectin

**75.** Which of the following opportunistic systemic mycoses is characterized by rapid development of severe tissue necrosis and emerged as specific complication associated with COVID-19 infection in India?
(a) Histoplasmosis
(b) Mucormycosis
(c) Coccidioidomycosis
(d) Sporotrichosis

**76.** Which of the following fungal infections is caused by dermal inoculation of the fungal agent, usually from a thorn?
(a) Mycetoma
(b) Aspergillosis
(c) Mucormycosis
(d) Sporotrichosis

**77.** Consider the following statements with regard to coccidioidomycosis:
1. It is a primary systemic mycosis caused by dimorphic fungi Coccidioides immitis and Coccidioides posadasii.
2. Primary pulmonary coccidioidomycosis presents with cough, fever, chest pain and arthritis.
3. Progressive pulmonary coccidioidomycosis presents with constitutional symptoms like fever, weight loss, anorexia and features of lobar pneumonia.
4. Coccidioides meningitis is a mild disease, not warranting any treatment.

Which of the statements given above are correct?
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1,3 and 4
(d) 2 ,3 and 4

**78.** Consider the following statements with regard to elapid snakebite:
1. Regardless of the anatomic site of bite, walking of victim should be discouraged.
2. Pressure immobilization should be used, wherever possible.
3. Ptosis can be present after the elapid bite.

Which of the statements given above are correct?
(a) 1, and 2 only
(b) 2 and 3 only
(c) 1,and 3 only
(d) 1 ,2 and 3

**79.** Which one of the following hormones is responsible for gallbladder contraction and release of bile into duodenum?
(a) Secretin
(b) Gastrin
(c) Cholecystokinin
(d) Vasoactive intestinal peptide

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**80.** Consider the following statements regarding radiation enteritis and proctocolitis:
1. Diarrhoea in the acute phase should be treated with codeine or loperamide.
2. Surgery is the treatment of choice and involves resection of the injured intestine.
3. Sucralfate enemas and hyperbaric oxygen are effective treatments.
4. Small bowel strictures and rectovaginal fistulae may develop as chronic complications.

Which of the statements given above are correct?
(a) 1, and 3 only
(b) 2 and 4 only
(c) 1,2 and 4
(d) 1 , 3 and 4

**81.** In serological investigation of hepatitis B virus infection, presence of hepatitis B e-antigen (HBeAg) is an indicator of
(a) active replication of virus in the liver
(b) acute liver failure
(c) chronic infection with hepatitis B virus
(d) inactive carrier phase of infection

**82.** Simultaneous infection with hepatitis B virus (HBV) and hepatitis D virus (HDV) followed by full recovery is associated with the appearance of
(a) low titres of anti-HDV antibody, IgM type
(b) low titres of anti-HDV antibody, IgA type
(c) high titres of anti-HDV antibody, IgM type
(d) high titres of anti-HDV antibody, IgG type

**83.** Consider the following statements with regard to jaundice:
1. Presence of scleral icterus indicates a serum bilirubin level of at least 3 mg/dL.
2. If the examiner suspects scleral icterus, second site to examine is underneath the tongue.
3. In long-standing jaundice, skin may become green due to reduction of bilirubin to biliverdin.
4. Sclerae have a particular affinity for bilirubin due to its high elastin content.

Which of the statements given above are correct?

(a) 1, and 3 only
(b) 2 and 4 only
(c) 1, 2 and 4 only
(d) 1 ,2, 3 and 4 only

**84.** Carotenoderma, due to ingestion of excessive amounts of carotene-containing fruits and vegetables, can be distinguished from jaundice by sparing of which of the following?
(a) Palms
(b) Soles
(c) Nasolabial folds
(d) Sclerae

**85.** Meares-Stamey test is used in which one of the following clinical conditions?
(a) Recurrent urinary tract infection in men
(b) Urinary tract infection in pregnant women
(c) Complicated cystitis in non-pregnant women
(d) Pelvic inflammatory disease

**86.** Which one of the following drugs is associated with calciphylaxis in chronic kidney disease patients?
(a) Calcium channel blocker
(b) Warfarin
(c) Non-calcium-based phosphate binder
(d) Thiazide diuretic

**87.** Consider the following pairs:

| | **Urinary sediments seen in AKI** | **Diagnosis** |
|---|---|---|
| 1. | RBC casts | Malignant hypertension |
| 2. | WBC casts | Pyelonephritis |
| 3. | Pigmented casts | Vasculitis |
| 4. | Granular casts | Myoglobinuria |

How many of the pairs given above are correctly matched?
(a) Only one pair
(b) Only two pairs
(c) Only three pairs
(d) All four pairs

**88.** Which one of the following is the primary underlying mechanism of haemolysis in paroxysmal nocturnal haemoglobinuria (PNH)?
(a) ABO incompatibility
(b) Red cell fragmentation
(c) Complement-mediated destruction of CD59(–) red blood cells
(d) Exotoxins produced by _Clostridium perfringens_

**89.** Which one of the following is a clonal haematopoietic stem cell disorder in which phenotypically normal red blood cells, granulocytes and platelets accumulate in the absence of a recognizable physiological stimulus?
(a) Mastocytosis
(b) Polycythemia vera
(c) Primary myelofibrosis
(d) Essential thrombocytosis

**90.** Which of the following insulins has a cloudy preparation and requires resuspension prior to injection?
(a) Lente
(b) Glargine
(c) Detemir
(d) Degludec

**91.** Which of the following statements are correct with regard to anorexia nervosa?
1. The illness is often precipitated by weight loss.
2. Food avoidance is common.
3. Body image is intact and there is no fear of weight gain.
4. Downy hair (lanugo) may develop on back, forearms and cheeks.

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1,3 and 4
(d) 2 ,3 and 4

**92.** Which of the following are adverse effects of loop-acting and thiazide diuretics?
1. Metabolic acidosis

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2. Hypovolemia
3. Hyponatremia
4. Hypokalemia

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1,3 and 4
(d) 2 ,3 and 4

**93.** Which one of the following statements is correct with regard to peptic ulcer prophylaxis?
(a) Stress ulceration during clinical illness is uncommon.
(b) Ulcer prophylaxis should be continued once absorption of enteral feed is established.
(c) Proton-pump inhibitors (PPIs) are effective at reducing the incidence of ulceration.
(d) PPIs when used with antibiotics may decrease the risk of _Clostridium difficile_ infection.

**94.** Which of the following are the features of post-lumbar puncture headache?
1. Dull aching occipitofrontal headache
2. Worse on waking but improves during the day
3. Recumbency usually improves the headache within minutes

Select the correct answer using the code given below:
(a) 1, and 2 only
(b) 2 and 3 only
(c) 1and 3 only
(d) 1,2 and 3

**95.** Which of the following are correct with regard to alpha-1-antitrypsin deficiency?
1. Prolonged jaundice in neonatal period
2. Pulmonary emphysema in adulthood
3. Panniculitis is seen rarely
4. Autosomal dominant disorder

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1,3 and 4
(d) 2 ,3 and 4

**96.** Which of the following drugs can cause granulomatous liver injury?
1. Carbamazepine
2. Allopurinol
3. Diltiazem
4. Acetaminophen

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1,3 and 4
(d) 2 ,3 and 4

**97.** Which of the following are the five essential components of nurturing care?
1. Health
2. Nutrition
3. Breastfeeding
4. Responsive caregiving
5. Early learning
6. Immunization
7. Safety and security
8. Supplementation

Select the correct answer using the code given below:
(a) 1, 2, 4, 5 and 7
(b) 1, 2, 3, 4 and 5
(c) 1, 4, 6, 7 and 8
(d) 2, 3, 5, 6 and 8

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**98.** A full-term baby born with birth weight of 2000 g comes for well-baby visit at two months of age. Which of the following nutritional supplements would you advise?
(a) Vitamin D orally 200 IU/day up to 3 months of age
(b) Vitamin D orally 200 IU/day up to 1 year of age
(c) Iron orally 2 mg/kg/day up to 3 months of age
(d) Iron orally 2 mg/kg/day up to 1 year of age

**99.** Which of the following are common problems in babies with intrauterine growth restriction delivered at term gestation?
1. Hypothermia
2. Hypoglycemia

3. Hypocalcemia

Select the correct answer using the code given below:

(a) 1, and 2 only
(b) 2 and 3 only
(c) 1and 3 only
(d) 1,2 and 3

**100.** Which one of the following statements is correct regarding a normal newborn's growth?

(a) Weight loss may be 8–10% of birth weight in the initial two weeks of life.
(b) Birth weight is regained by 7–10 days of age.
(c) Birth weight is regained within first week of life.
(d) Weight loss may be 12–15% of birth weight in the initial two weeks of life.

**101.** For developmental assessment of a baby, grasp is best assessed by offering the child

(a) a red ring
(b) a red cube
(c) red pellets
(d) multicoloured pellets

**102.** Urinary alkalinization as a method for enhancing excretion for poisoning is aimed at achieving

(a) serum pH 7.5–8
(b) urine pH 7.5–8
(c) serum pH 8
(d) urine pH 8

**103.** Exchange transfusion as a method to enhance excretion of poison is indicated in

(a) methemoglobinemia
(b) carbamazepine poisoning
(c) theophylline poisoning
(d) barbiturate poisoning

**104.** In case of a child with an acute poisoning by ingestion, activated charcoal may be used in which one of the following situations?

(a) Iron ingestion
(b) Antiepileptic ingestion
(c) Corrosive ingestion
(d) Lithium ingestion

**105.** Which of the following genetic causes are commonly associated with autism spectrum disorders?

1. Angelman syndrome
2. Fragile X syndrome
3. Tuberous sclerosis
4. Williams syndrome

Select the correct answer using the code given below.

(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**106.** To reduce the risk of neural tube defects in the baby, which of the following are recommended?

(a) Folate supplements, from one month before conception to three months after
(b) Folate supplements, from confirmation of pregnancy to the end of first trimester
(c) Zinc supplements, from one month before conception to three months after
(d) Zinc supplements, from confirmation of pregnancy to the end of first trimester

**107.** Vaccine-associated poliomyelitis is chiefly seen with which of the following strains of oral poliovirus?

(a) OPV 1 only
(b) OPV 2
(c) OPV 3 only
(d) Both OPV 1 and OPV 3

**108.** Which one of the following is categorized as a specific learning disability?

(a) Dysgraphia
(b) Dystonia
(c) Dysthymia
(d) Dysphoria

**109.** A baby is delivered at 34 weeks' gestation and found to be apneic at birth. After performing the initial steps of resuscitation, the baby is still apneic. The next step should be

(a) tactile stimulation

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(b) positive pressure ventilation using 30% oxygen
(c) positive pressure ventilation using 100% oxygen
(d) chest compression

**110.** A child requires detailed developmental evaluation if the developmental quotient is below
(a) 70%
(b) 75%
(c) 80%
(d) 85%

**111.** The upper limit of age for attainment of visual fixation or following is
(a) birth
(b) 1 month
(c) 2 months
(d) 3 months

**112.** A child develops 'stranger anxiety' at
(a) 2–3 months
(b) 4–5 months
(c) 6–7 months
(d) 8–9 months

**113.** Consider the following statements with respect to developmental milestones at 9 months of age :
1. At this age, child develops immature pincer grasp.
2. At this age, child can say bisyllables (mama, dada, etc.).
3. At this age, child can wave bye-bye.

Which of the statements given above are correct?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**114.** What are the upper age limits by which a child should start walking alone, and be able to speak single words?
(a) 12 months, 15 months respectively
(b) 15 months, 18 months respectively
(c) 15 months, 15 months respectively
(d) 18 months, 18 months respectively

**115.** A child presents to the emergency following ingestion of around 20 mL of kerosene oil about 40 minutes back. The child appears stable. Which one of the following measures should be done for the management of the child?
(a) Gastric lavage
(b) Oxygen therapy
(c) Intravenous steroids
(d) Radiography

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**116.** The event related to vaccination which can be contraindication for the next vaccination of similar/identical type is
(a) syncope following MMR vaccine
(b) encephalopathy following DPT vaccine
(c) abscess at injection site after DPT vaccine
(d) gastroenteritis following MMR vaccine

**117.** Which of the following events could be caused or precipitated by an active component of vaccine?
1. Anaphylaxis after measles vaccine
2. Encephalopathy after DPT vaccine
3. Adenitis following BCG vaccine
4. Gastroenteritis following MMR vaccine

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1,3 and 4
(d) 2 ,3 and 4

**118.** Which one of the following can be used for developmental screening for use in community to identify children (aged 0–6 years) with developmental delay?
(a) Revised Denver Development Screening Test (Denver II)
(b) Ages and Stages Questionnaire (ASQ-3)
(c) Phatak's Baroda Development Screening Test
(d) Trivandrum Development Screening Chart

**119.** According to the WHO clinical criteria, which of the following clinical signs are indicative of 'severe pneumonia or very severe disease' in children aged 2 months to 5 years?

1. Convulsions
2. Lower chest indrawing
3. Inability to feed
4. Stridor

Select the correct answer using the code given below:

(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1,3 and 4
(d) 2 ,3 and 4

**120.** An eleven-month-old unimmunized child comes for immunization. Which vaccines should be given in this visit?

(a) BCG, OPV, DPT and Hepatitis B vaccines
(b) OPV, DPT and MR vaccines only
(c) BCG, DPT and MR vaccines
(d) OPV, DPT, MR and Hepatitis B vaccines

END

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# PAPER 2023 ANSWERS

1. (d) athlete's heart

In athlete's heart, there is physiological hypertrophy of the left ventricle, leading to a thickened ventricular wall; however, diastolic function remains normal due to preserved ventricular compliance. In contrast, hypertrophic cardiomyopathy (HCM) usually entails impaired filling (i.e., diastolic dysfunction). Restrictive cardiomyopathy and endomyocardial fibrosis also produce diastolic abnormalities. Thus, only athlete's heart matches the description of a thickened ventricle with normal diastolic function.

2. (c) 1, 3 and 4

Paradoxical splitting of S2 occurs when aortic valve closure is delayed relative to pulmonic valve closure, so that the split actually becomes more pronounced on expiration rather than inspiration. Severe aortic stenosis (1) slows left ventricular ejection and delays A2. Right ventricular pacing (3) can mimic left bundle-branch delay, prolonging left ventricular ejection. Hypertrophic obstructive cardiomyopathy (4) also impedes left ventricular outflow, delaying A2. Right bundle branch block (2) usually produces a different, "wide" splitting pattern rather than paradoxical.

3. (c) tricuspid regurgitation

A systolic murmur that is best heard at the lower left sternal border and intensifies on inspiration (Carvallo's sign) classically indicates tricuspid regurgitation. The prominent 'cv' wave in the jugular venous pulse arises from the regurgitation of blood back into the right atrium during systole. Mitral regurgitation classically radiates to the axilla and does not increase with inspiration. Ventricular septal defect is heard best at the left sternal border but does not characteristically vary with respiration.

4. (a) constrictive pericarditis

Kussmaul's sign is an increase in jugular venous pressure on inspiration instead of the normal decrease. It is most often associated with constrictive pericarditis, where a rigid pericardium impairs right ventricular filling. The resulting back-up in venous return becomes more evident during inspiration, raising venous pressure instead of lowering it. While it can occur in some other right-heart pathologies, the classic association is with constrictive pericarditis, not typically with hypertrophic cardiomyopathy, myocardial infarction, or dilated cardiomyopathy.

5. (c) hypertrophic obstructive cardiomyopathy

Although aortic stenosis is typically heard in the right second intercostal space, the maneuver responses reveal hypertrophic obstructive cardiomyopathy (HOCM). The murmur of HOCM diminishes with handgrip (because afterload increases, reducing the outflow gradient) and intensifies with inhalation of amyl nitrite (which lowers afterload, increasing the obstruction). These dynamic changes distinguish it from aortic stenosis, whose murmur usually becomes louder with increased afterload. The location and expiration emphasis confirm a left-sided origin, consistent with HOCM's outflow tract murmur.

6. (c) Roth's spots

Modified Duke criteria have two main major categories: (1) typical organisms in blood culture or persistent positive blood cultures, and (2) evidence of endocardial involvement (echocardiographic findings such as vegetations, abscess, partial dehiscence of prosthetic valve, or new valvular regurgitation). Roth's spots—retinal hemorrhages with pale centers—are one of the peripheral (minor) criteria. They demonstrate embolic or immune-complex phenomena but do not count as major in establishing the diagnosis of infective endocarditis.

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7. (c) Giant cell arteritis

Giant cell arteritis (also known as temporal arteritis) primarily involves large and medium-sized arteries, especially the branches of the external carotid artery. Granulomatosis with polyangiitis (Wegener's) and eosinophilic granulomatosis with polyangiitis (Churg-Strauss) mainly involve small vessels, while polyarteritis nodosa affects medium-sized arteries. The hallmark of giant cell arteritis is granulomatous inflammation of large arterial walls, often leading to headaches, visual disturbances, and elevated inflammatory markers in older adults.

8. (a) systemic hypothermia

Osborn waves (also known as J waves) are highly characteristic of severe hypothermia. On the ECG, they appear as a positive deflection at the J point (the junction between the QRS complex and ST segment), creating a 'camel-hump' or 'late delta' shape. While different wave changes can be seen in pericarditis, myocarditis, or Brugada syndrome, the classic association for Osborn waves is systemic hypothermia (typically core temperatures < 30 °C).

9. (a) restrictive lung disease

Restrictive lung diseases are characterized by reduced lung volumes. A decrease in total lung capacity (TLC) below 80% of the predicted value signals the inability of the lungs to fully expand, typical of interstitial fibrosis, pneumoconiosis, or other restrictive conditions. In obstructive lung diseases, TLC is often normal or increased, but airflow is limited. Pulmonary hypertension or pulmonary embolism primarily affect vascular or perfusion components rather than significantly lowering the measured TLC.

10. (a) 1 and 3

In HOCM, reducing left ventricular volume (by decreasing preload) worsens the outflow obstruction and intensifies the murmur (statement 1 is correct). Conversely, increasing LV preload (e.g., via passive leg raising) expands the LV cavity, reducing obstruction and softening the murmur (statement 3 is correct). Decreasing LV afterload actually increases outflow obstruction and increases the murmur, not decreases it, so statement 2 is false. Squatting also increases venous return and afterload, typically softening the murmur, so statement 4 is false.

11. (c) V wave and C wave merge

A pansystolic murmur that increases with inspiration (Carvallo's sign) strongly suggests tricuspid regurgitation. In severe tricuspid regurgitation, the right atrium receives a large reflux of blood during systole, creating a pronounced 'v wave' that can merge with the 'c wave' sometimes referred to as a 'cv wave.' The jugular venous pulse typically shows this giant systolic wave, along with a more prominent or rapid y descent, not a blunted one. Hence, the correct description is that the v and c waves merge.

12. (c) Janeway's lesions

In infective endocarditis, Janeway's lesions (painless erythematous lesions on palms and soles) are considered part of the vascular phenomena—representing septic microemboli and vascular damage. Osler's nodes and glomerulonephritis reflect immune-complex (immunologic) phenomena, while Roth's spots (retinal hemorrhages) also represent an immunologic or embolic phenomenon classified as a minor criterion. Hence, among these options, only Janeway's lesions are counted under the "vascular phenomena" category in the Duke criteria.

13. (b) functional residual capacity

Functional residual capacity (FRC) is the volume of air that remains in the lungs at the end of a normal, unforced expiration. It is the sum of residual volume (RV) plus expiratory reserve volume (ERV). Residual volume (RV) is the air left in the lungs after a maximal exhalation, and vital capacity refers to the maximum volume that can be exhaled after a full inspiration. "Expiratory residual volume" is not a standard pulmonary term.

14. (a) urea breath test

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To verify eradication of Helicobacter pylori shortly after treatment, the urea breath test is preferred because it becomes negative soon after successful therapy. Stool antigen testing is also used, but the 13C (or 14C) urea breath test is often the most sensitive and specific for early follow-up. Serology remains positive for many months even after eradication, so it is not useful to confirm cure. Rapid urease testing generally requires endoscopy-based samples and is less common for post-treatment follow-up.

**15.** (a) duodenum

Zollinger-Ellison syndrome (ZES) is caused by gastrin-secreting tumors (gastrinomas) leading to acid hypersecretion. While these tumors often originate in the pancreas, the most frequent extra-pancreatic location is the duodenum. Gastrinomas here cause persistent acid production, resulting in recurrent peptic ulcers. Although they may spread to the liver (common site for metastasis), the duodenum is recognized as the most common non-pancreatic _primary_ site in ZES.

**16.** (d) 2, 3 and 4

Hepatitis C is primarily transmitted via blood and blood products. Intravenous drug abuse (2) is a common risk, vertical transmission (3) can occur from mother to child, and sharing potentially blood-contaminated personal items such as toothbrushes and razors (4) also increases risk. Faeco-oral transmission (1) is characteristic of hepatitis A and E, not hepatitis C. Therefore, 2, 3, and 4 are valid risk factors for acquiring hepatitis C.

**17.** (a) hypovolemic shock resulting from third space loss

In severe acute pancreatitis, inflammatory mediators increase vascular permeability and fluid leaks into the retroperitoneum (the "third space"). This leads to significant intravascular volume depletion and resultant hypovolemic shock, which is the most common early hemodynamic complication. While infected necrosis can cause sepsis (and septic shock), that typically arises later. Cardiogenic shock is less common unless there is pre-existing heart disease or a severe systemic inflammatory response. Abdominal compartment syndrome may occur but is not the most frequent cause of shock.

**18.** (a) Escherichia coli

Spontaneous bacterial peritonitis (SBP), typically occurring in cirrhotic patients with ascites, is most commonly caused by gram-negative enteric organisms. Escherichia coli tops the list, followed by Klebsiella and other gut flora. Enterococcus species and staphylococci occur less frequently but can be seen in particular hospital settings or certain risk groups. Streptococcus viridans is less commonly implicated compared to E. coli. Hence, E. coli remains the most likely pathogen.

**19.** (c) anti-HBc IgM

The 'window period' in hepatitis B infection is when HBsAg has become undetectable but anti-HBs has not yet appeared. During this interval, IgM anti-HBc is the main marker in the patient's serum and indicates recent/acute infection. Later, IgM anti-HBc can switch to IgG anti-HBc, which remains positive lifelong. Anti-HBsAb eventually appears after clearance or successful vaccination, and HBeAg reflects active viral replication but is not the key marker for identifying the window phase.

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**20.** (c) 1, 3 and 4

Typical celiac workup includes demonstration of specific serologies (IgA antiendomysial and anti-tTG) plus characteristic small-bowel biopsy changes (villous atrophy, crypt hyperplasia, and increased intraepithelial lymphocytes). While one normally expects _presence of tTG antibodies, in rare cases of selective IgA deficiency, tTG may be absent/negative. Hence "absence of tTG antibody" (4) can still be encountered in a subset of celiac patients. Statement (2)—"absence of reduced villous height"—would contradict celiac pathology, so it is wrong. Thus, (1), (3), and under special circumstances (4) are correct.

**21.** (a) 1, 3 and 4

Pegylated interferon (PEG-IFN) for chronic hepatitis B is indeed less well tolerated than nucleos(t)ide analogues (Statement 1 is correct). In practice, clinically meaningful resistance to PEG-IFN is not a major issue, so "resistance is common" (Statement 2) is typically considered false. PEG-IFN is generally not advised in advanced or decompensated cirrhosis because of safety concerns; hence, many regard it as "not useful" in cirrhosis (Statement 3). The standard course for PEG-IFN in chronic HBV is weekly injections for 48 weeks (Statement 4).

**22.** (d) 2, 3 and 4

The mainstay of tumor lysis syndrome management is aggressive intravenous hydration (2) to enhance renal clearance of uric acid, potassium, and phosphate. Rasburicase (3), a recombinant urate oxidase, rapidly lowers serum uric acid. Febuxostat (4) can be used to reduce uric acid formation as an alternative to allopurinol. Although urinary alkalinization (1) was historically used, it is no longer universally recommended because of potential complications like xanthine crystallization. Hence, 2, 3, and 4 remain the most accepted measures.

**23.** (d) 1, 2 and 3

Focal-onset seizures can sometimes progress (Jacksonian march) along a body part representation in the motor cortex. Todd's paralysis is a transient focal neurological deficit after a seizure, usually seen with focal epilepsy. Epilepsia partialis continua is a rare form of focal status epilepticus with repeated muscle jerks or partial seizures persisting for extended periods. All three phenomena can occur in focal (partial) seizure disorders, thus 1, 2, and 3 are correct.

**24.** (a) abrupt 3 Hz spike-and-slow wave discharges on EEG

Typical absence seizures (often seen in childhood) are characterized by sudden onset and offset of impaired consciousness, with the hallmark EEG finding: 3 Hz spike-and-slow-wave complexes. There is no postictal confusion (patients immediately resume baseline). They are not generally caused by multifocal structural lesions; rather, they're a generalized seizure type. Typical absence seizures typically respond very well to certain anti-seizure medications (e.g., ethosuximide), making answer (a) the distinguishing feature.

**25.** (b) 1, 2 and 4

Major contraindications to thrombolysis in acute ischemic stroke include recent serious head injury or intracranial surgery, recent myocardial infarction (particularly within the past 3 months if large), and active or recent significant bleeding (like GI bleeding in the last 3 weeks). Severe hypertension must be controlled before thrombolysis, but a blood pressure of exactly ">150/100 mm Hg" by itself is not an absolute contraindication—guidelines generally require lowering BP if systolic is >185 or diastolic >110. Hence 1, 2, and 4 are correct.

**26.** (a) Distal latency is normal in axonal degeneration and prolonged in segmental demyelination.

On nerve conduction studies, segmental demyelination primarily prolongs distal latencies and slows conduction velocity because the myelin sheath is responsible for rapid signal propagation. In pure axonal degeneration, the conduction velocity often remains relatively normal (until very advanced stages) and distal latency is typically within normal limits; however, the amplitude of the compound muscle action potential may be reduced. Prolonged distal latency is a clear hallmark of demyelination rather than axonal loss.

**27.** (b) Acamprosate

Acamprosate (calcium acetylhomotaurinate) is specifically used in the management of alcohol dependence to reduce cravings and maintain abstinence. It modulates glutamatergic neurotransmission, helping stabilize the chemical imbalance following the cessation of alcohol. Apomorphine and atropine do not play a role in alcohol dependence treatment. Azathioprine is an immunosuppressant with no effect on alcohol cravings. Hence, acamprosate

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is the standard choice for helping maintain sobriety alongside psychosocial interventions.

**28.** (b) Tyrosine kinase

The BCR-ABL1 fusion gene (most commonly found in chronic myelogenous leukemia) encodes a constitutively active tyrosine kinase. This abnormal kinase drives unchecked cell division and survival pathways. Targeted therapies (like imatinib) inhibit BCR-ABL's tyrosine kinase activity, thus controlling the leukemic process. It is not an alanine, leucine, or cysteine kinase—rather, its pathogenesis is tied explicitly to unregulated tyrosine phosphorylation.

**29.** (d) Tyrosine kinase inhibitors

Imatinib and related agents (Dasatinib, Nilotinib, Ponatinib) specifically inhibit the BCR-ABL tyrosine kinase found in chronic myeloid leukemia. They can also target other dysregulated kinases in different malignancies. They are not antibodies (monovalent or bivalent) nor interferons. Their principal mechanism is blockade of the ATP-binding site on the abnormal kinase, preventing phosphorylation of downstream signaling targets involved in tumor cell proliferation.

**30.** (c) Mucosa-associated lymphoid tissue lymphoma

H. pylori infection is strongly linked to gastric MALT (mucosa-associated lymphoid tissue) lymphoma. The chronic inflammation and immune stimulation in the stomach can lead to this low-grade B-cell lymphoma, which sometimes regresses upon H. pylori eradication. Burkitt's lymphoma is associated with EBV and translocation of the c-myc gene; Hodgkin's lymphoma has different etiologies; and adult T-cell leukemia/lymphoma is linked to HTLV-1 infection.

**31.** (b) Plasmodium vivax

The Duffy antigen (also called the Duffy blood group, or DARC) on red blood cells is the key receptor used by Plasmodium vivax for entry into erythrocytes. Individuals who are "Duffy-negative," common in certain African populations, exhibit relative resistance to infection by P. vivax because the parasite cannot bind effectively. This receptor does not play a comparable role for other intestinal protozoa like Giardia, Entamoeba, or Balantidium.

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**32.** (b) 1, 2 and 4

Cryoprecipitate is prepared by thawing fresh frozen plasma and collecting the cold-insoluble fraction. It is especially rich in fibrinogen (1), factor VIII (2), and von Willebrand factor (4), which helps with platelet adhesion. It also contains factor XIII and fibronectin, but not high levels of factor IX (that is primarily found in prothrombin complex concentrates). Hence, 1, 2, and 4 accurately reflect cryoprecipitate's main components.

**33.** (d) 1, 2, 3 and 4

All these viruses—HBV, HCV, HIV, and Parvovirus B19—are recognized as potential transfusion-transmitted infections, though mandatory screening drastically reduces the risk for hepatitis B, hepatitis C, and HIV. Parvovirus B19 can also be transmitted via blood products, potentially causing significant complications (like aplastic crisis) in vulnerable populations. Hence all four are transmissible via infected blood.

**34.** (d) X-linked recessive

Hemophilia B (factor IX deficiency), like Hemophilia A (factor VIII deficiency), follows an X-linked recessive inheritance pattern. Males are predominantly affected because they have only one X chromosome, while females are typically carriers unless they are homozygous for the defect. This pattern is not autosomal dominant or recessive, nor is it X-linked dominant. Most female carriers do not manifest severe disease, although some can have low factor levels due to lyonization.

**35.** (d) Paroxysmal nocturnal haemoglobinuria

Paroxysmal nocturnal hemoglobinuria (PNH) is a disorder caused by a PIGA gene defect leading to deficiency of GPI-anchored proteins that protect RBCs from complement-mediated

lysis. Characteristically, patients experience intravascular hemolysis (often worse at night), along with cytopenias (due to the close relationship with bone marrow failure), and a high risk of venous thrombosis (particularly hepatic or portal veins). The triad of hemolysis, pancytopenia, and thrombosis is classic for PNH, not for G6PD deficiency, hereditary spherocytosis, or HUS.

**36.** (a) Thalassemia

A low mean corpuscular volume (MCV) indicates microcytic anemia. Thalassemia is classically microcytic, often with very low MCV out of proportion to the mild anemia. In contrast, both vitamin B12 deficiency and folate deficiency typically cause macrocytic anemia (elevated MCV). Sickle cell anemia is usually normocytic or mildly microcytic, but by definition is not the classic cause of microcytosis. Thalassemia is thus the primary cause of significantly decreased MCV among these options.

**37.** (a) Kallmann syndrome

Kallmann syndrome is a form of congenital hypogonadotropic hypogonadism characterized by a failure of GnRH-secreting neurons to migrate properly, coupled with an impaired sense of smell (hyposmia or anosmia). Bardet-Biedl syndrome involves obesity, retinal dystrophy, polydactyly, and cognitive impairment; Prader-Willi syndrome features hyperphagia, obesity, and hypogonadism but not specifically hyposmia tied to GnRH deficiency; Wallenberg syndrome is a lateral medullary stroke syndrome. Hence, Kallmann syndrome is uniquely associated with GnRH deficiency plus hyposmia.

**38.** (a) Wolff-Chaikoff effect

The Wolff–Chaikoff effect is the autoregulatory phenomenon in which excess inorganic iodine acutely suppresses thyroid hormone synthesis and release. The gland temporarily halts organification (iodination of tyrosyl residues) when presented with very high iodine concentrations, thereby limiting hormone overproduction. This contrasts with the Jod-Basedow effect, where previously iodine-deficient individuals can experience hyperthyroidism upon sudden iodine repletion. "Reverse" Wolff-Chaikoff or Jod-Basedow effects are not standard physiological terms, making (a) the correct choice.

**39.** (c) 1, 2 and 3

Thyroid storm (thyrotoxic crisis) management targets blocking hormone synthesis and release and controlling sympathetic overactivity. Propranolol (1) reduces adrenergic symptoms and peripheral T4-to-T3 conversion. Sodium ipodate (2) similarly impairs the peripheral conversion of T4 to T3. Propylthiouracil (3) inhibits new hormone synthesis and also helps block T4-to-T3 conversion. Liothyronine (4) is synthetic T3 used in severe hypothyroid states, not in hyperthyroidism. Therefore, 1, 2, and 3 are indicated in thyrotoxic crisis.

**40.** (b) 1 and 2

Myxedema coma is a life-threatening form of severe hypothyroidism requiring prompt thyroid hormone replacement. Liothyronine (T3) (1) can rapidly increase circulating T3 levels, while levothyroxine (T4) (2) provides a sustained reservoir for T3 generation. Combining T3 and T4 in certain protocols can be beneficial, though high-dose IV levothyroxine alone is also common. Carbimazole (3) is an antithyroid agent used for hyperthyroidism, and sodium ipodate (4) also has a role in severe thyrotoxicosis, not in myxedema.

**41.** (d) Degludec

Insulin degludec is an ultra-long-acting basal insulin with a duration of action that can exceed 42 hours, providing a steady, low-level release to control fasting blood glucose. Insulin glargine typically lasts up to 24 hours. Detemir generally requires once or twice daily dosing. NPH has an intermediate duration. Degludec's pharmacokinetics allow more flexible dosing schedules and a reduced risk of hypoglycemia from peaks, making it particularly suitable for patients requiring very stable basal glucose management.

**42.** (b) Lactotroph

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Among functioning (hormone-secreting) pituitary adenomas, prolactin-producing (lactotroph) adenomas are the most common. Such tumors often present with galactorrhea and amenorrhea in women or hypogonadism in men due to hyperprolactinemia. Somatotroph adenomas (growth hormone-secreting) cause acromegaly or gigantism. Corticotroph adenomas produce excess ACTH (Cushing's disease). Thyrotroph adenomas are much less common. Therefore, lactotroph adenomas predominate in clinical practice.

**43.** (a) thyrotoxicosis factitia

Thyrotoxicosis factitia (exogenous intake of thyroid hormone) suppresses endogenous thyroid hormone production; hence, the thyroid gland produces little or no thyroglobulin, leading to low serum thyroglobulin levels. In contrast, hyperthyroid states such as Graves' disease, subacute thyroiditis, and toxic multinodular goiter involve excessive thyroid hormone release from the gland itself, thereby elevating thyroglobulin levels. Measuring thyroglobulin helps distinguish factitious ingestion from other causes of hyperthyroidism.

**44.** (b) He has definitive diagnosis of diabetes mellitus.

Criteria for diagnosing diabetes mellitus include a random plasma glucose $\geq$200 mg/dL (11.1 mmol/L) in the presence of classic symptoms such as polyuria, polydipsia, or unexplained weight loss. Since this patient's random glucose is 220 mg/dL and he has typical symptoms, he meets the diagnostic threshold. Impaired glucose tolerance or "indeterminate" status would not apply here because the random level plus symptoms definitively confirm diabetes mellitus.

**45.** (d) Euglycemic diabetic ketoacidosis may occur during treatment if there is a concurrent illness.

SGLT2 inhibitors (e.g., canagliflozin, empagliflozin) block glucose reabsorption in the renal proximal tubules, lowering blood sugar independently of insulin secretion or action. They typically reduce, not increase, blood pressure. Although primarily approved for type 2 diabetes, use in type 1 is off-label and can increase the risk of euglycemic diabetic ketoacidosis (DKA). This euglycemic DKA can occur, particularly during acute illness or reduced food intake, when insulin levels drop but urinary glucose excretion continues, masking typical hyperglycemia.

**46.** (c) exogenous glucocorticoid use

Exogenous steroid (glucocorticoid) use is often encountered in patients with chronic inflammatory conditions like rheumatoid arthritis. Clinically, they may develop Cushingoid features—moon facies, central obesity, striae, and hypertension. An overnight dexamethasone suppression test revealing very low cortisol and a suppressed ACTH suggests an external source of steroids rather than endogenous hypercortisolism. Normal imaging of the pituitary and adrenals further supports that there is no endogenous tumor (adrenal adenoma or pituitary adenoma).

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**47.** (c) Measure of serum ionized calcium and to administer IV calcium gluconate

Sudden onset muscle cramps, tingling (paresthesias), and carpopedal spasm after thyroidectomy strongly suggest acute hypocalcemia, typically from accidental removal or devascularization of the parathyroid glands. The immediate step is to check the serum (ionized) calcium level and, if low, give intravenous calcium gluconate to relieve symptoms and prevent complications such as tetany or seizures. Methylcobalamin, corticosteroids, or IV bicarbonate do not address the underlying hypocalcemia.

**48.** (a) Kallmann's syndrome

Kallmann's syndrome is characterized by GnRH deficiency with associated anosmia or hyposmia. Low GnRH release leads to low FSH and LH (hypogonadotropic) and thus inadequate gonadal function (hypogonadism). Klinefelter's (47,XXY) and Turner's (45,X) syndromes involve primary gonadal failure with elevated gonadotropins (hypergonadotropic hypogonadism). Cryptorchidism primarily involves undescended testes but does not inherently cause GnRH deficiency. Kallmann's

syndrome remains the classic cause of hypogonadotropic hypogonadism.

**49.** (c) 47 XXY

This presentation suggests Klinefelter's syndrome (47, XXY)—affected males often have testicular dysgenesis with small, firm testes, low testosterone, elevated gonadotropins (FSH, LH), tall stature, and may develop gynecomastia. A 46 XY karyotype is normal male, 45 XO describes Turner's syndrome (phenotypically female), and 21 trisomy is Down syndrome. Klinefelter's typically presents with signs of hypogonadism plus possible learning difficulties and certain body habitus features.

**50.** (a) 1, 2 and 3

Glimepiride (a sulfonylurea) can promote weight gain by increasing insulin levels and driving glucose into cells. Pioglitazone (a thiazolidinedione) also commonly leads to weight gain, partly through fluid retention and adipose tissue changes. Insulin formulations, including NPH insulin, can cause weight gain by promoting an anabolic state. Sitagliptin (a DPP-4 inhibitor) is generally weight-neutral. Therefore, 1 (Glimepiride), 2 (Pioglitazone), and 3 (NPH insulin) all tend to increase weight.

**51.** (b) 1 and 2 only

Adiponectin, an anti-inflammatory adipokine, is paradoxically _reduced_ in obesity (Statement 1 true). Orlistat is indeed a reversible pancreatic lipase inhibitor that limits fat absorption (Statement 2 true). Liraglutide (a GLP-1 receptor agonist) actually aids weight loss, not weight gain, in T2DM, so Statement 3 is false. Bariatric surgery guidelines generally require a BMI $\geq$40, or $\geq$35 with comorbidities; a threshold of >30 alone is not standard (Statement 4 is inaccurate).

**52.** (d) 2, 3 and 4

High-turnover malignancies can cause tumor lysis syndrome, releasing large quantities of uric acid. Preventive measures include vigorous IV hydration (2) to maintain renal perfusion and flush out uric acid, rasburicase (3) to break down uric acid enzymatically, and sometimes urine alkalinization (which can be achieved via acetazolamide) (4) to reduce precipitation of uric acid crystals. Probenecid (1) is not commonly used in this acute setting, as it can be unreliable and might promote crystalluria in high uric acid states.

**53.** (a) Liver

Plasmodium vivax and Plasmodium ovale form dormant liver-stage parasites called hypnozoites. Primaquine is uniquely effective at eradicating these latent forms residing in the hepatocytes. This is termed the "radical cure," which prevents relapse of malaria. Blood schizonticides, such as chloroquine, only clear the parasitemia from red blood cells but do not affect the liver hypnozoites. Hence, primaquine targets parasites in the liver, not in peripheral blood, brain, or bone marrow.

**54.** (d) 1, 2 and 3

HAND represents a spectrum of neurocognitive impairment in HIV-infected individuals. It ranges from asymptomatic neurocognitive impairment (mild deficits on testing but no apparent daily dysfunction), to mild neurocognitive disorder (deficits that mildly affect daily life), up to HIV-associated dementia (severe impairment). All three categories—(1), (2), and (3)—fall under HAND classification, reflecting the varying degrees and presentations of cognitive and behavioral manifestations seen in HIV infection.

**55.** (d) 1, 2, 3 and 4

Neurocysticercosis can manifest with personality changes and seizures if larvae lodge in the brain (1). Subcutaneous cysticerci often present as palpable nodules that can be surgically removed for diagnostic histopathology (2). Neurological symptoms commonly flare once the parasites begin to die, provoking an inflammatory response (often years later) (3). Antiparasitic therapy typically includes albendazole or praziquantel, and a 10-day praziquantel course can be used under medical guidance (4). Therefore, all four statements are correct.

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**56.** (a) 1 and 2

Strongyloides stercoralis typically infects the upper small intestine (duodenum), so statement (1) is correct. "Larva currens" is a characteristic, rapidly moving, serpiginous rash (often on the buttocks and abdomen), making (2) correct. Ivermectin is actually the treatment of choice—so (3) is false. Disseminated or hyperinfection syndrome usually occurs in immunocompromised, not immunocompetent, patients, so (4) is also false.

**57.** (c) 1, 2 and 4

Cutaneous larva migrans (commonly from animal hookworms) is indeed a frequent skin eruption among travelers (1), typically acquired by walking barefoot on contaminated beaches (2). It produces intensely _pruritic_ serpiginous tracks (so statement 3 is incorrect). The larvae migrate under the skin at rates often approaching 1–2 cm (sometimes up to 2–3 cm) per day (4). This explains the characteristic "creeping" lesion.

**58.** (c) 1, 3 and 4

Repeated stool examinations every 2–3 days help detect intermittently shed Giardia cysts (1). Most infections result from ingesting Giardia cysts in contaminated water (3). The organism is a flagellated protozoan, producing both cyst and trophozoite forms (4). Duodenal aspirates (often via string test) rather than a colonoscopy aspirate provide high diagnostic yields, so (2) is incorrect.

**59.** (a) Group A Streptococcus

Necrotizing fasciitis (NF) is classified into types based on microbiology. Type 2 NF is most commonly caused by Group A Streptococcus (Streptococcus pyogenes), either alone or sometimes in combination with Staphylococcus aureus. Type 1 NF is polymicrobial (aerobes + anaerobes), Vibrio vulnificus–related NF is often associated with seafood exposure, and Clostridium septicum–linked necrotizing infections are another distinct entity. The classic "flesh-eating" disease with a rapidly progressing course is typically Group A Streptococcus.

**60.** (c) 1 and 3 only

Following significant varicella exposure, a pregnant woman who lacks immunity should receive varicella-zoster immune globulin (VZIG) to prevent or attenuate infection (1). The live attenuated varicella vaccine (2) is contraindicated in pregnancy. If she shows signs of infection or is at high risk for complications, acyclovir (3) may be administered, though timing and severity guide its use. Prednisolone (4) is not indicated for routine prophylaxis or mild varicella in pregnancy.

**61.** (b) 2, 3 and 4 only

Listeria monocytogenes is resistant to most cephalosporins, making ceftriaxone (1) generally ineffective as monotherapy. The usual first-line therapy is ampicillin (3), often combined with gentamicin (2) for synergy. Patients allergic to penicillins can be treated with trimethoprim-sulfamethoxazole—which corresponds to sulfamethoxazole (4) paired with trimethoprim, though only sulfamethoxazole is listed here. Hence 2, 3, and 4 are recognized treatment options for Listeria infection.

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**62.** (a) 1, 2 and 3

Rickets (vitamin D deficiency) in children commonly manifests with craniotabes (1)—a softening of skull bones, frontal/parietal bossing (2), and hypotonia or muscle weakness (3). Radiographic findings typically show widened, cupped, and frayed metaphyses—not "shrinking" of the epiphyses, making (4) incorrect. Therefore, 1, 2, and 3 represent classic signs of rickets in children.

**63.** (d) Diuretics

Relative erythrocytosis (polycythemia) results from reduced plasma volume rather than an actual increase in red blood cell mass. Diuretic use can cause hemoconcentration by excess fluid loss, producing an artificially elevated hematocrit. High altitude, cardiorespiratory disease, and high-affinity hemoglobins typically cause _absolute_ polycythemia, since in those states the total RBC mass truly increases due to

chronic hypoxia or altered oxygen-hemoglobin affinity.

**64.** (d) 1, 2 and 4

Urine is indeed a good growth medium for bacteria (1). Post-menopausal atrophic changes can predispose to UTI (2). Not all asymptomatic bacteriuria cases warrant antibiotic therapy—only certain groups (e.g., pregnant women or those undergoing urological procedures) require treatment, so (3) is false. Specific strains of E. coli ("uropathogenic E. coli") have virulence factors promoting colonization of the urinary tract (4).

**65.** (a) 1 and 2 only

Scorpion venom is indeed delivered via the sting at the end of the tail (1). Many scorpion stings cause localized pain and mild systemic symptoms without life-threatening effects (2). Treatment typically includes analgesics, sedation, and sometimes alpha-blockade (e.g. prazosin) for severe envenomation by certain species. Anticholinergics are _not_ standard therapy, so (3) is incorrect. In severe cases, scorpion antivenom plus supportive care can be lifesaving.

**66.** (d) 2, 3 and 4

Kyasanur Forest Disease (KFD) is primarily endemic to the forested regions of Karnataka in southwestern India, not the Northeast (so 1 is false). The virus is maintained in monkey populations, with ticks serving as vectors (2 and 3 are true). An inactivated vaccine for at-risk populations in endemic areas is indeed available (4). Patients typically present with high fever, hemorrhagic tendencies, and significant morbidity.

**67.** (d) 1, 2 and 3

Brucellosis often presents with "undulant fever," which can fluctuate over weeks to months (1). Joint pain, arthritis, and spinal involvement are common musculoskeletal complications (2). Brucella species are facultative intracellular pathogens, surviving within macrophages (3). Untreated, the illness can become chronic with systemic and organ-specific manifestations. All three statements are true.

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**68.** (d) left main or proximal LAD

ST-segment elevation in lead aVR $\geq$1 mm—especially when coupled with diffuse ST depressions in other leads—often signifies global myocardial ischemia, most commonly implicating critical stenosis in the left main coronary artery or very proximal left anterior descending (LAD) artery. This pattern can also indicate severe triple vessel disease. In typical right coronary or circumflex occlusions, ST elevations are not isolated to aVR. Thus (d) is the recognized culprit location.

**69.** (b) Liraglutide

Liraglutide, a GLP-1 receptor agonist, not only improves glycemic control but also helps reduce body weight by decreasing appetite and slowing gastric emptying. In contrast, sulfonylureas (like glimepiride) and insulin typically promote weight gain, while DPP-4 inhibitors (e.g., sitagliptin) are generally considered weight-neutral. Hence, liraglutide is uniquely beneficial for obese type 2 diabetics seeking glycemic control plus weight management.

**70.** (d) 2 only

A cobblestone appearance of the bowel is classic for Crohn's disease (statement 2). Ulcerative colitis almost always involves the rectum (proctitis) and can extend proximally in a continuous pattern, so statement (1) is false. Skip lesions occur in Crohn's (discontinuous involvement), not in UC, making (3) false. Smoking actually tends to _worsen_ Crohn's but may _reduce_ severity in UC, so statement (4) is also false.

**71.** (a) 1, 2 and 3

In a significant pericardial effusion (especially if progressing to tamponade), one classically sees elevated jugular venous pressure (JVP), hypotension (part of Beck's triad), and often reduced urine output (oliguria) secondary to decreased cardiac output and renal perfusion. A "water hammer" pulse (bounding pulse) is

characteristic of aortic regurgitation rather than pericardial effusion. Hence, (1), (2), and (3) are typical findings; (4) is not.

**72.** (a) 1, 2 and 3

An $S_3$ can be a normal (physiologic) finding in children, young adults, and pregnant women (because of increased cardiac output). Pathologically, it is often associated with left ventricular failure (due to volume overload and reduced LV compliance). Mitral stenosis, however, typically produces a diastolic rumble and an opening snap, not an $S_3$. Thus, (1), (2), and (3) can generate $S_3$, while (4) does not.

**73.** (d) 2, 3 and 4

The PR interval on an ECG runs from the onset of the P wave (which represents atrial depolarization) to the beginning of the QRS complex (ventricular depolarization). Its normal duration is ~0.12–0.20 seconds (statement 2). Prolongation indicates delayed AV nodal conduction (3). A short PR interval is seen in pre-excitation syndromes such as WPW (4). Statement (1) is incomplete/misleading—"atrial depolarization" is represented by the P wave itself, whereas the PR interval includes atrial depolarization plus AV nodal delay.

**74.** (b) Praziquantel

Praziquantel is the primary treatment for all major forms of schistosomiasis, targeting Schistosoma haematobium, S. mansoni, and S. japonicum. It increases the parasite's membrane permeability to calcium, leading to spastic paralysis and death of the worms. Albendazole and ivermectin are more suited for nematode (roundworm) infections; doxycycline is an antibacterial (and is sometimes used for certain filarial infections), but not standard for schistosomiasis.

**75.** (b) Mucormycosis

Mucormycosis (caused by Mucorales fungi such as Rhizopus) can lead to very aggressive infections, with black necrotic eschar and rapid destruction of sinuses, orbit, palate, and brain in susceptible individuals. During COVID-19 surges (especially in poorly controlled diabetic or immunocompromised patients), mucormycosis became a notorious complication in India. Histoplasmosis, coccidioidomycosis, and sporotrichosis have different epidemiological profiles and are typically less acutely necrotizing than mucormycosis.

**76.** (d) Sporotrichosis

Sporotrichosis, caused by Sporothrix schenckii (a dimorphic fungus), typically follows a thorn prick or similar minor trauma. It produces a classic "ascending" chain of nodular lesions along lymphatic drainage. Mycetoma (Madura foot) is usually from various fungi/bacteria but often presents differently in foot or hand with draining sinuses. Aspergillosis and mucormycosis are more commonly inhaled and cause invasive or allergic disease, rather than the typical thorn inoculation route of Sporothrix.

**77.** (a) 1, 2 and 3

Coccidioidomycosis ("Valley fever") is a dimorphic fungal infection (1). Primary pulmonary infection often features mild respiratory symptoms, fever, chest pain, and can be accompanied by arthralgias/erythema nodosum (2). Progressive infection leads to more pronounced systemic symptoms including weight loss and can manifest as pneumonia (3). Coccidioidal meningitis, however, is _serious_ and requires prolonged antifungal therapy (4 is false).

**78.** (d) 1, 2 and 3

Elapid snakes (e.g., cobras, kraits) have neurotoxic venom that can cause muscle weakness, ptosis, and respiratory paralysis. Victims should be kept still to slow systemic spread of venom (1). Pressure immobilization bandaging is recommended in many guidelines for neurotoxic bites (2). Ptosis, diplopia, and bulbar weakness are common early signs of neurotoxicity (3).

**79.** (c) Cholecystokinin

Cholecystokinin (CCK), released by I-cells in the duodenum in response to fatty meals,

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triggers gallbladder contraction and stimulates the release of bile. It also relaxes the sphincter of Oddi, allowing bile to enter the duodenum. Secretin primarily stimulates bicarbonate secretion from the pancreas, gastrin promotes gastric acid secretion, and VIP has vasodilatory and other GI effects but does not cause gallbladder contraction.

**80.** (d) 1, 3 and 4

Acute radiation-induced GI symptoms such as diarrhea can be managed with antidiarrheals like loperamide or codeine (1). Chronic radiation proctocolitis often responds to sucralfate enemas and hyperbaric oxygen therapy (3). Long-term complications can include bowel strictures and fistulae (4). Surgery (2) is not the default "treatment of choice" but rather a last resort when severe strictures, perforation, or intractable bleeding occurs.

**81.** (a) active replication of virus in the liver

HBeAg is a marker of high-level HBV replication and infectivity. Its presence indicates that the virus is actively replicating in hepatocytes, often correlating with higher viral loads and greater infectivity. It does not by itself guarantee acute liver failure, nor does it imply an inactive carrier state. Chronic infection may or may not show HBeAg, depending on whether the virus is in a high-replicative or low-replicative phase.

**82.** (d) high titres of anti-HDV antibody, IgG type

When acute HBV and HDV co-infection occurs and the patient fully recovers, the immune response eventually shifts from IgM (acute) to IgG (long-term) anti-HDV antibodies, reflecting resolved infection and immune memory. An early high IgM level would correspond to active or recent infection, but "full recovery" implies convalescence and thus high IgG titers.

**83.** (d) 1, 2, 3 and 4

All four are valid observations in clinical jaundice. Generally, scleral icterus becomes evident when total bilirubin exceeds ~2.5–3.0 mg/dL (1). Checking under the tongue is another reliable site for early jaundice (2). Prolonged jaundice sometimes yields a greenish hue on the skin surface as bilirubin oxidizes to biliverdin (3). The sclera's elastin binds bilirubin readily, making them appear yellowish earlier than most tissues (4).

**84.** (d) Sclerae

Carotenemia (or carotenoderma) causes a yellowish discoloration of the skin often most notable on palms, soles, and nasolabial folds but crucially spares the sclera. In contrast, hyperbilirubinemia (jaundice) will typically cause scleral icterus. Thus, if the sclerae remain white, but the skin is yellowish, carotene excess is more likely than true jaundice.

**85.** (a) Recurrent urinary tract infection in men

The Meares-Stamey (four-glass) test is a specialized diagnostic procedure for evaluating chronic or recurrent prostatitis in men. By sequentially collecting urethral swab, midstream urine, expressed prostatic secretions, and post-prostatic massage urine, one can localize the site of infection (urethra vs. bladder vs. prostate). It is neither used routinely for UTIs in women nor pelvic inflammatory disease.

**86.** (b) Warfarin

Calciphylaxis (calcific uremic arteriolopathy) is a rare, life-threatening condition most often seen in end-stage renal disease. Warfarin use has been noted as a risk factor because it reduces matrix Gla protein (an inhibitor of vascular calcification) by interfering with vitamin K recycling. While phosphate disturbances and certain dialysis issues also play roles, the known association of warfarin with calciphylaxis is stronger than that for calcium channel blockers, phosphate binders, or thiazides.

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**87.** (c) Only three pairs

1. RBC casts frequently occur in glomerulonephritis or malignant hypertension (1 correct).
2. WBC casts are characteristic of pyelonephritis or interstitial nephritis (2 correct).
3. Pigmented (dark-brown or "muddy brown") casts typically come from

hemoglobin or myoglobin in acute tubular necrosis, not vasculitis (3 is incorrect—vasculitis generally shows RBC casts, not pigmented).

4. Myoglobinuria can cause brown "granular" or "pigment" casts (4 correct).

Hence three of the four listed pairs are matched correctly.

**88.** (c) Complement-mediated destruction of CD59(–) red blood cells

PNH arises from an acquired mutation (PIGA gene) that impairs the synthesis of GPI-anchored proteins, including CD55 and CD59, which protect RBCs against complement. Without these protectors, RBCs are highly susceptible to complement-mediated lysis, especially under low pH conditions at night. This process is not driven by ABO incompatibility, mechanical fragmentation, or bacterial toxins.

**89.** (b) Polycythemia vera

Polycythemia vera (PV) is a myeloproliferative neoplasm characterized by an overproduction of mostly RBCs but often elevated WBCs and platelets too. It arises from a clonal mutation, frequently JAK2 V617F, causing uncontrolled erythropoiesis independent of normal physiological signals. Mastocytosis entails abnormal mast cells, myelofibrosis produces marrow fibrosis, and essential thrombocytosis chiefly raises platelet counts.

**90.** (a) Lente

Older intermediate insulins like Lente (and NPH) are cloudy suspensions containing insulin crystals. They must be gently mixed (resuspended) before injection to ensure a uniform dose. By contrast, basal analogues such as glargine, detemir, and degludec are clear solutions and do not require re-suspension. Lente insulin is less commonly used nowadays but remains a prototypical cloudy insulin.

**91.** (b) 1, 2 and 4

Anorexia nervosa typically begins with a weight-loss event or dieting (1), and patients often avoid food rigorously (2). A hallmark is a distorted body image with intense fear of weight gain; therefore, statement 3—claiming "body image is intact"—is incorrect. "Lanugo" hair on the trunk, forearms, and face may develop as the body's attempt to maintain warmth under extreme weight loss (4).

**92.** (d) 2, 3 and 4

Loop and thiazide diuretics often cause hypovolemia (from volume depletion), hyponatremia (excess sodium excretion), and hypokalemia. In contrast, they frequently lead to metabolic _alkalosis_, not acidosis. Alkalosis arises because diuretic-induced volume contraction elevates aldosterone, which increases renal potassium and hydrogen ion loss. Hence, (2), (3), and (4) are correct, while (1) is not.

**93.** (c) Proton-pump inhibitors (PPIs) are effective at reducing the incidence of ulceration.

Stress-related mucosal damage is _common_ in critically ill patients, so (a) is incorrect. Typically, once full enteral feeding is established, many guidelines suggest discontinuing prophylaxis, contradicting (b). Moreover, combined PPI plus antibiotics often _increase_ the risk of _C. difficile_ infection, not decrease it (d). The recognized correct statement is that PPIs can effectively lower stress-ulcer incidence, particularly in high-risk ICU settings.

**94.** (c) 1 and 3 only

A post–lumbar puncture headache is often described as a dull or throbbing occipitofrontal headache (1). It classically worsens when the patient is upright and improves rapidly upon lying flat (3), due to reduced CSF pressure in the upright position. Statement (2), "worse on waking but improves during the day," does not reflect the typical posture-related pattern. Instead, it tends to worsen with standing and ease with recumbency.

**95.** (a) 1, 2 and 3

Alpha-1-antitrypsin deficiency can present in neonates with cholestatic jaundice (1), while adults classically develop early-onset panacinar emphysema (2). In some cases, a rare

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panniculitis can occur (3). However, it follows an autosomal _codominant_ inheritance, not a simple autosomal dominant pattern, so (4) is false.

**96.** (a) 1, 2 and 3

Granulomatous hepatitis is a recognized adverse reaction to several medications including carbamazepine, allopurinol, and diltiazem. These can trigger a granulomatous inflammatory response in liver tissue. Acetaminophen typically causes hepatocellular necrosis with markedly elevated transaminases in overdose, not granulomas. Thus, (1), (2), and (3) are implicated in granulomatous liver injury; (4) is not.

**97.** (a) 1, 2, 4, 5 and 7

According to the WHO-UNICEF "Nurturing Care Framework," five interrelated components are: Good Health (1), Adequate Nutrition (2), Responsive Caregiving (4), Security & Safety (7), and Opportunities for Early Learning (5). Breastfeeding (3) and immunization (6) are vitally important for child health but are typically categorized under these broader headings. "Supplementation" (8) is more specific.

**98.** (d) Iron orally 2 mg/kg/day up to 1 year of age

A 2000 g newborn is considered low birth weight (LBW). Guidelines recommend prophylactic iron supplementation of ~2 mg/kg/day starting from early infancy until at least 12 months for LBW or preterm infants to prevent iron deficiency. Although vitamin D supplementation (often 400 IU/day) is also important, the specific correct statement among the listed options is to continue iron 2 mg/kg/day up to 1 year, which aligns with WHO and other pediatric guidelines for LBW babies.

**99.** (d) 1, 2 and 3

Term babies with intrauterine growth restriction (IUGR) are predisposed to multiple metabolic and physiological challenges. Hypothermia occurs due to limited subcutaneous fat and poor thermoregulation (1). Hypoglycemia is frequent from inadequate glycogen stores (2). Hypocalcemia can also develop, particularly in severely compromised neonates (3). All three are recognized complications of IUGR births.

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**100.** (b) Birth weight is regained by 7–10 days of age.

It is normal for newborns to lose up to ~5–10% of their birth weight in the first week. By about 7–10 (up to 14) days of life, most healthy infants regain their birth weight. Option (a) slightly confuses the timing—most of the initial weight loss occurs in the first week. Losing 12–15% (d) is usually considered excessive. Option (c) is too narrow (within the first week may happen, but standard teaching is ~7–10 days).

**101.** (c) red pellets

In standard developmental screening, small objects—often referred to as "red pellets" or similarly sized items—are best for assessing a baby's evolving grasp. By around 9 months, infants begin to demonstrate an early pincer grasp (using thumb and index finger) when picking up small pellets. Offering larger objects (such as a ring or cube) primarily tests the palmar grasp seen at earlier ages. Hence, "red pellets" most directly evaluate the progression to fine/pincer grasp.

**102.** (b) urine pH 7.5–8

In poisonings with weak acids (e.g., salicylates), raising the urine pH promotes excretion by trapping the ionized form of the toxin in the renal tubules ("ion trapping"). Typically, we target a urine pH of about 7.5–8, achieved by administering IV sodium bicarbonate. Significantly altering blood (serum) pH above 7.5–7.55 can be dangerous; the therapeutic goal is only to alkalinize the urine.

**103.** (a) methemoglobinemia

Severe methemoglobinemia (especially if resistant to or contraindicating methylene blue) may warrant exchange transfusion to rapidly reduce dangerous methemoglobin levels. While dialysis or hemoperfusion are often used for certain drug overdoses (e.g., theophylline, carbamazepine), exchange transfusion is not standard for them. In life-threatening methemoglobinemia with compromised oxygen

delivery, exchanging the patient's blood can quickly restore normal hemoglobin.

**104.** (b) Antiepileptic ingestion

Activated charcoal adsorbs many drugs but has poor affinity for metals (like iron or lithium), caustics (corrosives), or alcohols. Antiepileptics (e.g., phenobarbital, phenytoin, carbamazepine) can be bound effectively by charcoal, reducing their gastrointestinal absorption if given promptly after ingestion. In contrast, iron, corrosives, and lithium do not significantly bind to activated charcoal, making it largely ineffective in those poisonings.

**105.** (a) 1, 2 and 3

Autism spectrum disorder can occur in several known genetic syndromes. Fragile X (2) is one of the most common single-gene causes of autism-like features, Angelman syndrome (1) often includes severe developmental issues with possible autistic traits, and Tuberous sclerosis (3) has a recognized association with neurobehavioral abnormalities, including autism. Williams syndrome, on the other hand, is typically characterized by a very social, outgoing personality—less aligned with autism features.

**106.** (a) Folate supplements, from one month before conception to three months after

Folic acid supplementation is crucial for preventing neural tube defects. Guidelines advise starting at least one month prior to conception (to ensure adequate folate status at the time of neural tube formation) and continuing through at least the first 12 weeks (i.e., "three months after" conception). Waiting until pregnancy is confirmed (option b) may be too late, as neural tube closure occurs very early. Zinc supplementation is not the standard prophylaxis for neural tube defects.

**107.** (b) OPV 2

Historically, the Sabin oral polio vaccine (OPV) includes three attenuated poliovirus serotypes (1, 2, and 3). Of these, type 2 (OPV2) has been most commonly implicated in vaccine-associated paralytic polio (VAPP) and circulating vaccine-derived strains. Because of this risk (and the near-eradication of wild type 2), global immunization initiatives have shifted to a bivalent OPV (types 1 & 3) in many regions, removing the type 2 component to reduce VAPP and cVDPV.

**108.** (a) Dysgraphia

A "specific learning disability" refers to difficulties in reading (dyslexia), writing (dysgraphia), or mathematics (dyscalculia), among other cognitive areas, not due to overall intellectual disability or other neurological disorders. Dysgraphia is specifically an impairment in written expression—handwriting, spelling, or composition. Dystonia (b) is a movement disorder, dysthymia (c) is a persistent depressive mood disorder, and dysphoria (d) typically refers to a state of unease or dissatisfaction in mood.

**109.** (b) positive pressure ventilation using 30% oxygen

According to neonatal resuscitation guidelines, once you have completed the "initial steps" (warming, positioning, drying, stimulating) in a preterm baby who remains apneic or gasping, the next step is to begin positive pressure ventilation (PPV). For preterm infants (<35 weeks), recommended starting oxygen concentration is typically 21–30% rather than 100%, aiming to avoid hyperoxia. Chest compressions are indicated only if the heart rate remains <60 bpm after adequate ventilation.

**110.** (a) 70%

The Developmental Quotient (DQ) compares a child's developmental age to chronological age. Many standard guidelines use 70% as a cutoff—if a child's DQ falls below 70, it signals significant delay requiring thorough evaluation. This threshold is analogous to an IQ <70 in older children, suggesting a marked developmental lag. Children above 70% but below 85% may still need monitoring, but 70% is the widely accepted red-flag level for more urgent assessment.

**111.** (c) 2 months

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Newborns can briefly fix on a face or bright object, but reliable, consistent visual fixation and tracking are usually established by about 1 to 2 months of age. By 2 months, an infant is expected to follow a moving object smoothly across midline. If an infant has not achieved this skill by 2 months, further examination may be indicated. Birth or 1-month-old infants may have only partial or inconsistent tracking, and 3 months would be well outside the usual window.

**112.** (c) 6–7 months

Stranger anxiety typically appears around the mid-first year (often cited as 6–9 months), reflecting the infant's recognition of familiar vs. unfamiliar faces. Although many textbooks mention it most prominently at around 7 or 8 months, it can begin as early as 6 months. Hence, "6–7 months" best marks the usual onset. By 8–9 months, the behavior is already quite established. Before 4 or 5 months, infants are usually not discriminating enough to show strong stranger wariness.

**113.** (d) 1, 2 and 3

By around 9 months, infants typically demonstrate an inferior (immature) pincer grasp, using the pads of the thumb and index finger (statement 1). They often start producing babbling or repetitive bisyllabic sounds like "mama," "dada," though not always with true meaning (statement 2). Many will also respond socially, including waving bye-bye (statement 3). All three are standard 9-month milestones.

**114.** (b) 15 months, 18 months respectively

Most toddlers walk independently by around 12 months, but 15 months is considered the upper limit of normal for walking alone. Likewise, using single meaningful words generally emerges around 12–15 months, but if absent by 18 months, it raises concern for language delay. Thus, the recognized "alarm points" (or upper limits) are walking by 15 months, single words by 18 months. Beyond those ages often warrants further developmental evaluation.

**115.** (d) Radiography

Kerosene (a hydrocarbon) ingestion may cause pulmonary complications if aspirated. Gastric lavage is generally contraindicated because it can provoke aspiration. Steroids are not routinely recommended, and oxygen is given if respiratory distress arises. However, a chest radiograph is typically obtained to evaluate for evidence of hydrocarbon aspiration pneumonitis—especially since the child's condition could worsen if there is hidden lung involvement. Stable appearance at presentation does not exclude developing aspiration changes.

**116.** (b) encephalopathy following DPT vaccine

A major neurologic complication such as "encephalopathy" within a strict time frame post-vaccination is considered a contraindication to repeating that same vaccine. Syncope, injection-site abscess, or mild GI upset are not absolute contraindications; they may warrant further caution but do not typically bar revaccination. With DPT (diphtheria-pertussis-tetanus), true encephalopathy (e.g. coma, prolonged seizures, or serious brain dysfunction) is the recognized red-flag event.

**117.** (a) 1, 2 and 3

Serious allergic reaction (anaphylaxis) to the vaccine's active components or stabilizers can occur with measles (1). Encephalopathy has been reported (rarely) after DPT (2). BCG often causes local lymph node involvement (e.g., regional adenitis) (3). While mild GI upset can accompany live-virus vaccines, "gastroenteritis" specifically after MMR is not typically described as a direct effect of an active viral component; it is more classically associated with rotavirus vaccine. Therefore, 4 is less clearly attributable.

**118.** (d) Trivandrum Development Screening Chart

While Denver II, ASQ-3, and Phatak's test are recognized developmental screening tools, the Trivandrum Development Screening Chart (TDSC) is specifically recommended for large-scale community use in India to quickly identify children 0–6 years at risk for developmental delays. It's easy to administer, covering important milestones in a chart format. The other tools are certainly valid but are more commonly

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employed in clinical or research settings rather than broad-based community screening.

**119.** (d) 1, 2, 3 and 4

Under IMCI/WHO guidelines, lower chest wall indrawing in a child >2 months typically signals pneumonia, and additional danger signs (e.g., convulsions, inability to feed/drink, and stridor at rest) upgrade to "severe pneumonia" or "very severe disease." Stridor when calm and significant feeding difficulty imply airway compromise or severe systemic illness. The presence of any such danger sign elevates management urgency to referral or advanced treatment.

**120.** (d) OPV, DPT, MR and Hepatitis B vaccines

For an unimmunized 11-month-old, standard catch-up includes covering poliovirus (OPV), diphtheria-pertussis-tetanus (DPT), measles-rubella (MR), and Hepatitis B. The child is already nearly a year old, so giving BCG at this stage is often approached on a case-by-case basis (e.g., tuberculin testing if older). The more universally recommended immediate catch-up focuses on OPV, DPT, MR, and Hep B by 1 year. This ensures protection against four major vaccine-preventable diseases in a single visit.

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# QUESTION PAPER 2022

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1. A 52 year old man with history of coronary artery disease is currently on sublingual nitroglycerin 0.5 mg, SOS, metoprolol 50 mg twice a day, aspirin 75 mg once a day, enalapril 5 mg once a day, for the last one year. The patient is now complaining of breathlessness and wheeze. Which one of the following drugs is most likely to be implicated for this new symptom ?
   (a) Enalapril
   (b) Metoprolol
   (c) Nitroglycerin
   (d) Aspirin

2. A patient with ischaemic heart disease on regular follow-up has a resting heart rate of 90 beats/minute. The patient is taking metoprolol 50 mg twice a day. Which one of the following drugs may be added to his prescription if he also has signs of heart failure ?
   (a) Ranolazine
   (b) Diclofenac
   (c) Prednisolone
   (d) Ivabradine

3. An 18 year old boy got frost bite of left feet after working in a snowy field for 5-6 hours. He complained of pain, numbness and limited moment of his toes. The skin appeared white and waxy. Which one of the following is contradicted as initial treatment ?
   (a) Rewarming by immersion of feet in water bath at 40-44°C
   (b) Massage
   (c) Cleaning of injured area with soap
   (d) Use of analgesia and sterile dressing

4. Which of the following anti-coagulant agents can be administered by oral route ?
   1. Rivaroxaban
   2. Fondaparinux
   3. Apixaban
   4. Dabigatran

   Select the correct answer using the code given below :
   (a) 1 and 3 only
   (b) 1, 2 and 4
   (c) 1, 3 and 4
   (d) 2, 3 and 4

5. Which of the following drugs may be associated with leg swelling ?
   1. Calcium channel blockers
   2. NSAIDs
   3. Glucocorticoids
   4. Mineralocorticoids

   Select the correct answer using the code given below:
   (a) 1 and 2 only
   (b) 2, 3 and 4 only
   (c) 3 and 4 only
   (d) 1, 2, 3 and 4

6. Which of the following produce loud S1 on cardiac auscultation ?
   1. Anaemia
   2. Pregnancy
   3. Thyrotoxicosis
   4. Mitral regurgitation

   Select the correct answer using the code given below :
   (a) 1, 2 and 3
   (b) 1, 2 and 4
   (c) 1, 3 and 4
   (d) 2, 3 and 4

7. Which of the following are correct about Ivabradine ?
   1. It may be of use in severe heart failure
   2. It acts on SA node
   3. It reduces heart rate
   4. It is effective in atrial fibrillation

   Select the correct answer using the code given below:
   (a) 1, 2 and 3
   (b) 1, 2 and 4
   (c) 1, 3 and 4

(d) 2, 3 and 4

8. Left atrial dilatation on X-ray chest is characterised by which of the following ?
1. Straight left heart border
2. Rounding of left heart border
3. Double cardiac shadow
4. Widening of the angle of carina

Select the correct answer using the code given below:
(a) 1 and 3 only
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

9. A 30 year old male is being evaluated for shortness of breath. On examination of the jugular venous pulse (JVP), there is a rise in the JVP on inspiration. Which one of the following is most likely diagnosis ?
(a) Constrictive pericarditis
(b) Atrial septal defect
(c) Aortic regurgitation
(d) Severe mitral stenosis

10. A 24 year old man presents with acute onset shortness of breath with precordial chest pain. ECG reveals ST elevation with upward concavity and PR segment depression in lead V2 to V6 and reciprocal changes in lead aVR. The most likely diagnosis is
(a) Anterior wall myocardial infarction
(b) Acute pericarditis
(c) Anterior wall aneurysm
(d) Aortic dissection

11. Which of the following are Controller Therapies in the management of acute asthma ?
1. Anticholinergics
2. Systemic glucocorticoids
3. Inhaled glucocorticoids
4. Omalizumab

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

12. Low pleural fluid glucose (<60 mg%) may be observed in which of the following ?
1. Pyogenic pleural effusion
2. Rheumatoid pleuritis
3. Malignant pleural effusion
4. Hepatic hydrothorax

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1 and 2 only
(c) 1, 3 and 4
(d) 2, 3 and 4

13. Which of the following are correct regarding Idiopathic Pulmonary Fibrosis ?
1. Radiological pattern of usual interstitial pneumonia
2. Finger clubbing
3. More common in elderly

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

14. Diagnostic work-up for a case of suspected Bronchial asthma should reveal which of the following abnormalities ?
1. Reduced $FEV_1/FVC$
2. Increased functional residual volume
3. Reduced diffusion capacity
4. Increment in $FEV_1$ in response to inhaled bronchodilators

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1 and 4 only
(d) 2, 3 and 4

15. Which of the following conditions predispose to obstructive sleep apnea?
1. Hyperthyroidism
2. Acromegaly
3. Obesity
4. Use of alcohol/sedatives

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Select the correct answer using the code given below:
(a) 2 and 3 only
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**16.** Which of the following are correct with regard to acute fatty liver of pregnancy?
1. It is typically present in first trimester
2. It is more common in multiple pregnancies
3. Liver biopsy is rarely needed
4. Delivery of fetus is indicated

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1 and 4 only
(d) 2, 3 and 4

**17.** Which one of the following are markers of poor prognosis in acute pancreatitis?
1. Elderly individual
2. Increased white blood cell count
3. Low serum calcium
4. Hypercarbia

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**18.** Which of the following are the common causes of acute pancreatitis?
1. Gallstone
2. Alcohol
3. Post-ERCP
4. Campylobacter jejuni

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**19.** Which of the following are the aetiologies of haemochromatosis?
1. Thalassaemia
2. Anaemia of pyruvate kinase deficiency
3. Chronic cor pulmonale
4. Porphyria cutanea tarda

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1 and 4 only
(d) 2, 3 and 4

**20.** Which of the following drugs are implicated in peptic ulcer disease, not caused by Helicobacter pylori and NSAIDs?
1. Clopidogrel
2. Glucocorticoids
3. Bisphosphonates
4. Colloidal bismuth subcitrate

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1 and 2 only
(c) 1, 3 and 4
(d) 2 and 4 only

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**21.** Which of the following are symptoms of irritable bowel syndrome?
1. Gas and flatulence
2. Abdominal pain
3. Blood in stools
4. Diarrhoea

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**22.** Vertical transmission of hepatitis B can be prevented by which of the following interventions?
1. Passive immunisation of infant at birth
2. Active immunisation of infant at birth
3. Antiviral therapy in third trimester for mother with HBV-DNA level of >2,00,000 IU/mL

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**23.** Which of the following are correct in respect of jaundice?
1. Patients complain of darkening of urine before they notice jaundice
2. Jaundice is usually detectable with a serum bilirubin level of over 1.8 mg/dl
3. In Gilbert syndrome, jaundice is more noticeable after fasting

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**24.** Irritable bowel syndrome is favoured by which of the following?
1. Worsening of symptoms by stress
2. Recurrent abdominal discomfort
3. Age more than 50 years at onset
4. Alternating diarrhoea and constipation

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**25.** The diagnosis of protein losing enteropathy can be confirmed by
(a) Hydrogen breath test
(b) Fecal clearance of alpha-1 antitrypsin
(c) Fecal $^{51}Cr$ labelled transthyretin level
(d) Fecal calprotectin level

**26.** RBC casts on urine analysis are seen in which of the following?
1. Glomerulonephritis
2. Interstitial nephritis
3. Vasculitis
4. Malignant hypertension

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**27.** Which of the following are correct regarding Essential Tremors?
1. It may present at any age
2. Head is almost never involved
3. Tremor may improve with small amount of alcohol

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**28.** Which of the following drugs may be associated with Parkinson's disease?
1. Atypical anti-psychotic drugs
2. Lithium
3. MPTP (methyl-phenyl-tetrahydro-pyridine)

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**29.** Which of the following are suggestive of Parkinson's disease?
1. Lead pipe rigidity
2. Cog wheel rigidity
3. Festinating gait
4. Romberg test positive

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1 and 2 only
(c) 1 and 3 only
(d) 2, 3 and 4

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**30.** Which of the following are correct regarding Idiopathic Parkinson's disease?
1. Motor symptoms are almost always initially symmetrical
2. Non-motor symptoms include hyposmia and constipation
3. Cognition is spared in early disease
4. Speech may become softer and indistinct

Select the correct answer using the code given below:
(a) 2 and 3 only
(b) 1 and 4 only
(c) 1, 3 and 4
(d) 2, 3 and 4

**31.** Which of the following are correct with regard to Levodopa?
1. It is most effective for relieving tremors
2. Only a small portion of total drug reaches the brain
3. Nausea may be offset by domperidone
4. It may trigger hallucinations

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 2 and 4 only
(c) 1 and 3 only
(d) 2, 3 and 4

**32.** Which of the following are risk factors for Stroke?
1. Sickle cell disease
2. Cigarette smoking
3. Hypofibrinogenaemia
4. Atrial fibrillation

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2 and 4 only

**33.** Which of the following are correct in respect of Myasthenia gravis?
1. Symptoms worsen towards the end of the day
2. There may be difficulty in chewing and swallowing
3. Acetylcholine receptors in the pre-junctional membrane are involved
4. Penicillamine may precipitate similar illness

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1 and 3 only
(d) 2 and 4 only

**34.** Which of the following are the tests for functional assessment of encephalopathy?
1. Flapping tremors
2. Number connection test
3. Constructional apraxia

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

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**35.** Which one of the following is correct regarding blood components in clinical practice?
(a) ABO blood group antigens are polypeptide chains on the surface of RBCs
(b) Platelets can be stored for up to 35 days
(c) Hemolytic disease of newborn occurs when mother's IgA anti RBC antibodies cross the placenta and lyse fetal RBCs
(d) Transfusion associated GVHD can be prevented by prior irradiation of transfused blood

**36.** Which one of the following is an oral direct Thrombin inhibitor?
(a) Apixaban
(b) Rivaroxaban
(c) Dabigatran
(d) Argatroban

**37.** Which of the following are correct with regard to metformin?
1. The maximum tolerated dose is 2000 mg/day
2. Lactic acidosis is the major adverse effect of metformin

3. It may lower the blood levels of Vitamin B12

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**38.** Which of the following statements are correct regarding short stature?
1. Linear bone growth rates are pituitary dependent
2. Normal bone age in a child with short stature suggests hormonal disorder
3. Final height in boys can be estimated by adding 6.5 cm to mid-parental height
4. Replacement therapy with recombinant GH restores growth velocity in GH-deficient children

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1, 3 and 4
(d) 2, 3 and 4

**39.** Which one of the following drugs used to treat Diabetes mellitus, is least likely to cause hypoglycemia?
(a) Insulin
(b) Glimepiride
(c) Sitagliptin
(d) Repaglinide

**40.** Which of the following constitute differential diagnosis of hypocalcemia?
1. Hypomagnesaemia
2. Chronic alcoholism
3. Pseudohypoparathyroidism
4. Paget's disease

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1 and 2 only
(c) 3 and 4 only
(d) 2, 3 and 4

**41.** Which of the following are useful for the treatment of Hirsutism?
1. Amiloride
2. Oestrogen
3. Finasteride
4. Spironolactone

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 3 and 4 only
(d) 2, 3 and 4

**42.** Which of the following is a long acting insulin?
(a) Aspart
(b) Glargine
(c) Lispro
(d) Regular

**43.** A 15 year old girl presents with severe abdominal pain, vomiting, cold extremities, tachycardia and hypotension. Lab investigations show blood glucose 400 mg/dL, blood pH 6.9, urine ketones +++, and serum creatinine 1.4 mg/dL. She is promptly administered IV fluids and insulin. After 4 hours, she complains of inability to lift her limbs. What is the next step to be considered in her management?
(a) Intravenous normal saline
(b) Intravenous sodium bicarbonate
(c) Urine sample for ketones
(d) Potassium repletion

**44.** Composition of oral rehydration solution (WHO) is
(a) Na–90 m mol/L, K–20 m mol/L, Cl–80 m mol/L, Energy–54 kcal/L
(b) Na–80 m mol/L, K–20 m mol/L, Cl–70 m mol/L, Energy–54 kcal/L
(c) Na–90 m mol/L, K–40 m mol/L, Cl–80 m mol/L, Energy–27 kcal/L
(d) Na–80 m mol/L, K–25 m mol/L, Cl–70 m mol/L, Energy–54 kcal/L

**45.** Which of the following are correct regarding tuberculous meningitis?
1. Acid-Fast Bacilli are infrequently seen on direct smear of CSF

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2. CSF culture for MTB is the gold standard for diagnosis
3. Xpert MTB/RIF assay is a preferred initial diagnostic option

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**46.** Which one of the following is a subcutaneous preparation useful for treatment of osteoporosis?
(a) Denosumab
(b) Alendronate
(c) Zoledronic acid
(d) Raloxifene

**47.** Which of the following are correct with regard to osteoporosis?
1. It does not cause symptoms until a fracture occurs
2. Vertebral fracture can present with loss of height, in absence of pain
3. Smoking is protective
4. It sometimes presents incidentally as radiological osteopenia

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**48.** Which of the following are correct with regard to Ankylosing spondylitis?
1. Bamboo spine may be seen
2. Early morning back pain is rare
3. Uveitis is most common extra articular feature
4. It is more common in males

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**49.** Carpel Tunnel Syndrome is associated with which of the following features?
1. Pain and tingling in hands at night
2. Weakness of thumb abduction
3. Loss of sensation over lateral half of the palm
4. Atrophy of hypothenar eminence

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**50.** Which of the following can be used to monitor disease activity in rheumatoid arthritis?
1. Pain (visual analogue scale)
2. X-Ray of hands and wrists
3. DAS 28 score
4. ESR

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**51.** Which one of the following HIV-associated infections is least likely with CD4 count >100 cells/$mm^3$?
(a) Cerebral toxoplasmosis
(b) Tuberculosis
(c) Herpes zoster
(d) Pneumocystis jirovecii pneumonia

**52.** Tests for graphesthesia and stereognosis are used clinically to assess
(a) Cortical sensation
(b) Posterior column
(c) Cerebellar function
(d) Lateral spinothalamic tract

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**53.** A blast victim is brought to the emergency. BP 80/50 mmHg, Pulse 110/min (thready), $SpO_2$ 70%. Rapid shallow breathing, signs of external blood loss, raised JVP, and absent heart sounds. Which one of the following is the next single most immediate step in management, after securing airway, breathing, and circulation?
(a) Chest X-ray PA and lateral view
(b) Urgent needle thoracostomy
(c) Urgent pericardiocentesis
(d) Blood for cross match followed by blood transfusion

**54.** A 21 year young female was brought to the Emergency Department with history of unknown substance ingestion. She has vomiting, profuse diarrhoea, bronchorrhoea, and excessive sweating. On examination, miosis and muscular fasciculations were present. What is the most likely diagnosis?
(a) Corrosive substance poisoning
(b) Aluminium phosphide poisoning
(c) Zinc phosphide poisoning
(d) Organophosphorus poisoning

**55.** A young female of 22 year old presented to the medical emergency with complaints of nausea, vomiting, abdominal pain, diarrhoea, and convulsions along with methaemoglobinemia. What is the likely diagnosis?
(a) Aluminium phosphide poisoning
(b) Zinc phosphide poisoning
(c) Copper sulphate poisoning
(d) Lead poisoning

**56.** Which of the following are the components of the SOFA (Sequential Organ Failure Assessment) ?
1. Serum bilirubin
2. Platelet count
3. Leucocyte count
4. Serum creatinine

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**57.** Purtscher's retinopathy may be associated with
(a) Acute fulminant hepatic failure
(b) Acute pancreatitis
(c) Acute peritonitis
(d) Acute cholecystitis

**58.** Which of the following may constitute the characteristic triad of Zollinger-Ellison syndrome?
1. Severe peptic ulceration
2. Gastric acid hypersecretion
3. Gastrinoma
4. Pancreatic Neuro-endocrine tumour

Select the correct answer using the code given below:
(a) 1 and 3 only
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

**59.** In a healthy young adult, what proportion of sleep time is comprised Rapid Eye Movement (REM) sleep?
(a) 5–10%
(b) 20–25%
(c) 45–50%
(d) 70–75%

**60.** Which of the following drugs can cause Idiopathic Intracranial Hypertension?
1. Tetracycline
2. Retinoid
3. Vitamin A
4. Sulfonamides

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

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**61.** As per the Gell and Coombs classification, Farmer's lung is which type of hypersensitivity disease?
(a) Type-I
(b) Type-II
(c) Type-III
(d) Type-IV

**62.** Hormonal regulation of salt and water balance in a nephron occurs at
(a) Proximal Convoluted Tubule (PCT)
(b) Loop of Henle
(c) Distal Convoluted Tubule (DCT)
(d) Collecting Ducts

**63.** Which one of the following parameters suggests pre-renal azotemia?
(a) Renal tubular epithelial cell casts
(b) Gromular (granular) casts in urine sediment
(c) Hyaline casts in urine sediment
(d) Fractional excretion of sodium >1%

**64.** Most common cause of Chronic Kidney Disease (CKD) is
(a) Hypertension associated CKD
(b) Autosomal Dominant Polycystic Kidney Disease (ADPKD)
(c) Diabetic nephropathy
(d) Glomerulonephritis

**65.** Which of the following statements regarding contrast induced nephrotoxicity are correct?
1. Diabetes Mellitus is a risk factor.
2. N-acetylcysteine can fully reverse the renal injury.
3. Hydration is necessary.
4. Omit Metformin if nephrotoxicity occurs.

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 2, 3 and 4
(d) 1, 3 and 4

**66.** Which component of auto-regulation of glomerular filtration acts on the efferent arteriole?
(a) Autonomous myogenic reflex
(b) Tubuloglomerular feedback
(c) Angiotensin II mediated vasoconstriction
(d) None of the above

**67.** Which of the following are consequences of nephrotic syndrome?
1. Increased lipoprotein synthesis
2. Low serum globulin levels
3. Increased serum aldosterone levels
4. Increased serum Antithrombin III levels

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2 and 3 only

**68.** Sickle cell syndromes are caused by a mutation in the β-globin gene. Which one of the following correctly describes the change?
(a) Sixth amino acid–glutamic acid is replaced by valine
(b) Twenty-sixth amino acid–glutamic acid is replaced by lysine
(c) Sixth amino acid–glutamic acid is replaced by lysine
(d) Ninety-eighth amino acid–valine is replaced by methionine

**69.** In which of the following is a high reticulocyte production index seen?
1. Sickle cell disease
2. Vitamin B-12 deficiency
3. Glucose-6-phosphate dehydrogenase deficiency
4. Blood loss

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**70.** Which one of the following combinations of drugs can be used for treatment of relapsed myeloma?
(a) Infliximab, Methotrexate, Dexamethasone
(b) Lenalidomide, Bortezomib, Dexamethasone
(c) Rituximab, Vincristine, Cytarabine
(d) Methotrexate, Doxorubicin, Prednisone

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**71.** Which of the following can be used in the initial management of heparin induced thrombocytopenia?
1. Fondaparinux
2. Rivaroxaban
3. Lepirudin
4. Warfarin

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**72.** Red cell protoporphyrin levels will be raised in which of the following conditions?
1. Absolute iron deficiency
2. Relative iron deficiency
3. Lead poisoning

Select the correct answer using the code given below:
(a) 1 and 3 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

**73.** Negative Iron Balance is the first stage in the progression to Iron Deficiency Anaemia. Which of the following laboratory investigations will be found deranged in this stage, thereby pointing to early iron-store depletion?
1. Bone Marrow Iron Stores
2. Percent transferrin saturation
3. Serum ferritin
4. Total Iron Binding Capacity

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**74.** Which of the following drugs carry a definite risk of causing clinical haemolysis in persons suffering from Glucose-6 phosphate dehydrogenase deficiency?
1. Primaquine
2. Dapsone
3. Cotrimoxazole
4. Nitrofurantoin

Select the correct answer using the code given below:
(a) 1, 3 and 4
(b) 1 and 2 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

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**75.** A 40 year old male presented with complaints of generalised weakness, weight loss, abdominal discomfort and decreased appetite. On examination Splenomegaly (massive) was present. On investigation it was found that haemoglobin was 7.0 g/dL, platelet count – 8 lakh per cubic mm, WBC – 90000 per cubic mm. Most probably this is the case of
(a) Chronic lymphocytic leukemia
(b) Chronic myeloid leukemia
(c) Acute lymphoblastic leukemia
(d) Acute myeloid leukemia

**76.** Which of the following are risk factors for type 2 diabetes mellitus?
1. Family history of diabetes
2. Underweight
3. Physical inactivity
4. Polycystic ovary syndrome

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**77.** Which of the following statements with regard to gestational diabetes mellitus (GDM) are correct?
1. Most women revert to normal glucose tolerance post partum
2. Children born to a GDM mother have no increased risk of diabetes mellitus later in life
3. Glucose intolerance develops during second and third trimesters
4. Insulin resistance is related to metabolic changes of pregnancy

Select the correct answer using the code given

below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**78.** A Thyroid Function Test report shows the following results:
TSH – Undetectable
T3 – Raised
T4 – Raised
Which one of the following will be the most likely interpretation on the basis of the above report?
(a) Hypothyroidism secondary to pituitary disease
(b) Transient thyroiditis in evolution
(c) Primary thyrotoxicosis
(d) Overtreatment of hypothyroidism with Liothyronine

**79.** Which of the following biochemical abnormality is seen in severe hyper-triglyceridemia?
(a) Psuedohyponatremia
(b) Metabolic alkalosis
(c) Hyperuricemia
(d) Hyperkalemia

**80.** Which of the following statements are correct about treatment with vit D supplement?
1. Serum calcium levels improve earlier than serum PTH levels.
2. Patients should be closely observed with serial vitamin D levels in blood as vitamin D toxicity occurs frequently.
3. Vitamin D supplementation should always be in conjunction with calcium supplementation.
4. Nephrolithiasis is a known complication.

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**81.** The first line investigation for diagnostic evaluation of patients with hypercalcemia is
(a) 24 hour urinary calcium excretion
(b) Serum phosphate levels
(c) Serum i PTH levels
(d) Serum vitamin D levels

**82.** Consider the following conditions:
1. Kaposi's sarcoma
2. Lymphoma
3. Tuberculosis
4. Persistent generalised lymphadenopathy

Which of the above are causes of lymphadenopathy in a HIV positive patient?
(a) 1 and 3 only
(b) 2 and 3 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

**83.** A patient receiving chemotherapy develops neutropenia. He presents with fever, cough, expectoration, chest pain and hemoptysis. His CT scan of chest reveals nodular infiltrates with halo sign and crescent sign. The most useful drug for treating him is
(a) Colistin
(b) Granulocyte Macrophage Colony Stimulating Factor
(c) Voriconazole
(d) Piperacillin-tazobactam

**84.** A patient undergoes splenectomy after an accident. He will require oral prophylaxis against which of the following organisms?
(a) Staphylococcus aureus
(b) Escherichia coli
(c) Streptococcus pneumoniae
(d) Pneumocystis carinii

**85.** A 30 year old male recently diagnosed with HIV presented with odynophagia. He was started on a proton-pump inhibitor and an upper GI endoscopy was done. There were serpiginous ulcers in a normal surrounding mucosa in distal esophagus. The most likely diagnosis is
(a) Herpes simplex esophagitis
(b) Gastro-esophageal reflux disease
(c) Cytomegalovirus esophagitis

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(d) Candida esophagitis

**86.** Which one of the following statements regarding post gonococcal urethritis (PGU) is correct?
(a) Neisseria gonorrhoea is the most frequent cause of PGU in men
(b) PGU refers to non-gonococcal urethritis in men treated earlier with single dose of penicillin
(c) Combination therapy with azithromycin leads to resistance and should be avoided
(d) PGU usually occurs within one week after treatment of non-gonococcal urethritis.

**87.** Which one of the following treatments is considered as Gold standard for brucellosis in adults?
(a) Streptomycin and Doxycycline
(b) Azithromycin and Rifampin
(c) Trimethoprim and Sulfamethoxazole
(d) Amikacin and Ciprofloxacin

**88.** Which one of the following has the highest risk of human immuno-deficiency virus (HIV) transmission after single exposure to an HIV-infected source?
(a) Vaginal delivery
(b) Vaginal intercourse
(c) Blood transfusion
(d) Percutaneous needle stick injury

**89.** Consider the following statements with regard to vitamin C:
1. It is heat stable.
2. Normal platelets are poor in ascorbate.
3. Perifollicular hyperkeratosis is a clinical sign of scurvy.
4. Infants fed exclusively on boiled milk are vitamin C deficient.

Which of the above statements are correct?
(a) 1 and 2
(b) 2 and 3
(c) 1 and 4
(d) 3 and 4

**90.** Which of the following statements are correct in respect of vitamin D?
1. Skin exposure to sunlight is the main source
2. Deficiency of vitamin D causes distal muscle weakness
3. Vitamin D synthesis decreases in winter, as one moves away from equator
4. Body store accumulated during summer is consumed during winter

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**91.** Which of the following are used in the treatment of Acne vulgaris?
1. Topical benzoyl peroxide
2. Topical antibiotics like clindamycin
3. Oral isotretinoin
4. Oral ivermectin

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**92.** Which one of the following is a cause of scarring alopecia?
(a) Androgenic alopecia
(b) Alopecia Areata
(c) Syphilis
(d) Radiotherapy

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**93.** Which of the following are used as mood stabilizers for treatment of bipolar disorder?
1. Valproic acid
2. Lamotrigine
3. Carbamazepine
4. Propranolol

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4

(d) 2, 3 and 4

**94.** An elderly alcoholic man who mainly eats a diet of maize and maize products presents with complaints of chronic diarrhoea, severe sunburn-like lesions on exposed parts and acute delirium. He is admitted. What is the likely diagnosis and its treatment?
(a) Celiac disease, Gluten free diet
(b) Vitamin B 12 deficiency, Parenteral B12 therapy
(c) Pellagra, Niacin therapy
(d) Whipple's disease, Doxycycline + Trimethoprim

**95.** Which one of the following is an indication for self-injectable adrenaline (epinephrine)?
(a) Anaphylaxis to allergens that are difficult to avoid
(b) Cardiogenic shock
(c) Pheochromocytoma
(d) Complete heart block

**96.** Which of the following statements with regard to arterio-venous fistula in dialysis patient are correct?
1. Distension and thickening of vessel wall occurs
2. Formed upto a year before dialysis is contemplated
3. Leg veins are usually preferred
4. Synthetic graft may be used if fistula formation is not possible

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**97.** An infant was born at 30 weeks of gestation and weighs 1.2 kg at birth. Which of the following is the recommended initial feeding method?
(a) Intravenous fluids only
(b) Feeding by spoon and katori
(c) Breastfeeding
(d) Orogastric feeding

**98.** A newborn delivered at 32 weeks gestation is started on spoon feeds after birth. On feeding with spoon, the baby demonstrates some spilling and coughing. What is the next step in management?
(a) Oragastric or nasogastric tube feeding
(b) Intravenous fluid therapy
(c) Gastrostomy tube feeding
(d) Breastfeeding

**99.** A child speaks bisyllables like Ma-Ma and Ba-Ba. He is able to sit without support, and looks at the source of sound diagonally. His likely age is
(a) 4 months
(b) 6 months
(c) 8 months
(d) 10 months

**100.** After sustaining a head injury, an 18 month old child displays eye opening only to pain, moans on painful stimuli and withdraws to painful stimuli. What is the modified Glasgow Coma Scale Score in this child?
(a) 6
(b) 8
(c) 10
(d) 12

**101.** Which of the following are reversible causes of electromechanical dissociation seen in pulseless electrical activity?
1. Pericardial tamponade
2. Pulmonary thrombo-embolism
3. Hyperthermia
4. Hypokalemia

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

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**102.** A 3-day old newborn presents with jaundice since birth. Examination reveals pallor and hepatosplenomegaly. The newborn also has a cephalhematoma. Which one of the following is the most important indicator to the diagnosis of pathologic jaundice?
(a) Pallor
(b) Hepatosplenomegaly
(c) Clinical jaundice since birth
(d) Cephalhematoma

**103.** What is the diagnosis of Autism Spectrum Disorder primarily based upon?
(a) Clinical criteria only
(b) Clinical criteria and genetic studies only
(c) Clinical criteria and MRI brain only
(d) Clinical criteria, genetic studies and MRI brain

**104.** According to the National AIDS Control Program, which one of the following drugs is given to newborns born to HIV-positive mothers to prevent mother-to-child transmission of HIV infection?
(a) Nevirapine
(b) Stavudine
(c) Indinavir
(d) Ritonavir

**105.** Which one of the following statements is correct in context of human breast milk?
(a) The concentration of lactose is 5 g/dL
(b) The protein content is higher than that in animal milk
(c) Human milk does not contain taurine and cysteine like animal milk and formula milk
(d) Human milk contains omega 2 and omega 6 (very long chain) fatty acids

**106.** Which of the following are age-appropriate language milestones in a normally developing 2 year-old child?
1. Vocabulary of 50–100 words
2. Uses pronouns
3. Occasional repeating of words
4. Stating his name when asked

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

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**107.** Which of the following tools are used for developmental screening?
1. Denver-II
2. Ages and Stages Questionnaire
3. Parents Evaluation of Developmental Status
4. Bayley Scale for Infant and Toddler Development

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**108.** According to King's College criteria, which of the following are indicators for referring to liver transplantation following acetaminophen toxicity?
1. Transaminase levels 4000 IU/L
2. Acidemia (Serum pH < 7.3) after adequate fluid resuscitation
3. Coagulopathy (INR 6)
4. Renal dysfunction (creatinine 3–4 mg/dL)

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**109.** Which one of the following statements is correct about intra-dermal fractional Inactivated Polio Vaccine (fIPV) with respect to intramuscular (I/M) IPV?
(a) fIPV is one-tenth of the I/M dose of IPV
(b) fIPV is one-fifth of the I/M dose of IPV
(c) fIPV is half of the I/M dose of IPV
(d) fIPV is three-fourth of the I/M dose of IPV

**110.** Which one of the following statements is correct regarding the Government of India program 'Home-based care of the young child'?
(a) It was started in 2014
(b) The grassroots health worker is the Anganwadi worker
(c) The grassroots health worker makes 6 home visits
(d) The infant is monitored from 3 months to 15 months of age

**111.** In a child with high anion gap metabolic acidosis, poisoning with which of the following may be suspected?
(a) Iron
(b) Digoxin
(c) Rifampicin
(d) Beta blockers

**112.** Which one of the following is a 'Danger Sign' for a newborn baby?
(a) Temperature between 36.0 °C and 36.5 °C
(b) Respiratory rate more than 60/min
(c) Heart rate of 120/min
(d) Weight loss of 8% within first week of life

**113.** The codes given below represent specific types of permanent teeth:
1. Central and lateral incisors
2. Canines
3. Premolars
4. Molars

The eruption of which of the following combinations will be close to menarche in girls?
(a) 1 and 2
(b) 2 and 3
(c) 3 and 4
(d) 1 and 4

**114.** Urinary alkalinisation is used for enhancing excretion of which of the following poisoning?
(a) Phenobarbitone
(b) Alprazolam
(c) Phenytoin
(d) Lithium

**115.** A 4 year old child is brought with a history of ingestion of 1 g of paracetamol two hours back. What should be the initial management?
(a) Induced vomiting
(b) Gastric lavage
(c) Oral N-acetyl cysteine
(d) Alkaline diuresis

**116.** Antidote to reverse the muscarinic effects of organophosphate toxicity is
(a) Pralidoxime aldoxime methiodide (PAM)
(b) Atropine
(c) Adrenaline
(d) N-acetylcysteine

**117.** A 7 year old child is brought to the emergency with seizures and drowsiness. The child had been receiving some drugs for fever for the past two days. The child is found to be cyanosed with an oxygen saturation of 40% and unresponsive to oxygen therapy. Blood gas analysis reveals a normal $PaO_2$. Which drug intake may have caused the above condition?
(a) Chloroquine
(b) Amoxicillin-Clavulanic acid
(c) Paracetamol
(d) Mefenamic acid

**118.** Autism Spectrum Disorder is characterised by which of the following?
1. Onset before 3 years of age
2. Impaired verbal and gestural communication
3. Stereotypic and restrictive behavioural patterns
4. Tangential speech

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**119.** Which vaccines are stored in the top rack of the main refrigerator compartment at temperature of 4–10 °C?
(a) DPT, Hepatitis B, Measles, MMR vaccines
(b) DPT, TT, Hepatitis A vaccine

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(c) BCG, DPT and Typhoid
(d) BCG, Measles and MMR vaccines

**120.** Identification of '4 Ds' is a key element of which National Health Programme?
(a) IMNCI (Integrated Management of Childhood and Neonatal Illness)
(b) ICDS (Integrated Child Development Scheme)
(c) RBSK (Rashtriya Bal Swasthya Karyakram)
(d) JSSK (Janani Shishu Suraksha Karyakram)

END

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# PAPER 2022 ANSWERS

1. (b) Metoprolol

Although metoprolol is relatively cardioselective for β1-receptors, at higher doses or in susceptible individuals (e.g., those with a history of asthma or reactive airway), it can still induce bronchoconstriction. This manifests clinically as wheezing and shortness of breath. Enalapril more commonly causes a dry cough rather than wheezing, nitroglycerin generally does not provoke bronchospasm, and aspirin-induced respiratory issues are more commonly linked to nasal polyps and asthma exacerbations (AERD). Hence, metoprolol is the most likely culprit.

2. (d) Ivabradine

Ivabradine selectively inhibits the funny (If) current in the sinoatrial (SA) node, reducing heart rate without affecting contractility. In patients with heart failure and elevated resting heart rates despite being on a beta-blocker (like metoprolol), ivabradine helps further lower heart rate and improve outcomes in those with reduced ejection fraction. Ranolazine is used primarily for angina management. Diclofenac (an NSAID) can worsen fluid retention in heart failure, and prednisolone may aggravate fluid overload in heart failure.

3. (b) Massage

In frostbite management, rapid rewarming in a water bath of about 40–44°C is a key initial step, combined with proper wound care, analgesia, and sterile dressing. Vigorous rubbing or massage of the frostbitten area is contraindicated because it can cause mechanical injury to already-damaged tissues and exacerbate tissue loss. Cleaning the injured area with mild soap and providing pain relief are appropriate measures, but massage may dislodge clots or damage fragile tissues.

4. (c) 1, 3 and 4

Rivaroxaban, apixaban, and dabigatran are novel oral anticoagulants (NOACs). They are taken orally and act by either directly inhibiting factor Xa (rivaroxaban, apixaban) or directly inhibiting thrombin (dabigatran). Fondaparinux, however, is administered subcutaneously and selectively inhibits factor Xa but is not available as an oral formulation. Therefore, among the listed agents, only rivaroxaban (1), apixaban (3), and dabigatran (4) can be given orally.

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5. (d) 1, 2, 3 and 4

All four classes can contribute to fluid retention and peripheral edema. Dihydropyridine calcium channel blockers (e.g., amlodipine) commonly cause vasodilatory edema. NSAIDs can reduce renal prostaglandin synthesis, leading to sodium and water retention. Glucocorticoids induce fluid retention by increasing sodium reabsorption. Mineralocorticoids (e.g., fludrocortisone or endogenous hyperaldosteronism) also promote sodium and water retention, contributing to peripheral edema. Therefore, all four can be associated with leg swelling.

6. (a) 1, 2 and 3

A loud first heart sound (S1) typically occurs when the mitral valve leaflets are wide open and then close forcefully (often in high cardiac output states or situations with a short PR interval). Anaemia, pregnancy, and thyrotoxicosis all increase cardiac output and can intensify S1. Mitral regurgitation, however, generally leads to a soft S1 because the valve closure is less forceful (regurgitant flow and incomplete coaptation). Thus, 1, 2, and 3 are correct.

7. (a) 1, 2 and 3

Ivabradine selectively inhibits the pacemaker "funny" current in the SA node, thereby reducing heart rate without affecting myocardial contractility. It is indicated in patients with heart failure (reduced ejection fraction) who have a persistent elevated heart rate despite

beta-blocker therapy. It works only if there is sinus rhythm, so it is not effective in atrial fibrillation because AF involves disorganized electrical activity not controlled by a single sinus pacemaker. Hence statements 1, 2, and 3 are correct.

**8.** (c) 1, 3 and 4

On a chest X-ray, left atrial enlargement can manifest as a straightening (or subtle bulge) of the left heart border (due to an enlarged atrial appendage), a double density sign on the right side of the heart silhouette ("double cardiac shadow"), and splaying of the carina or widening of the subcarinal angle as the enlarged left atrium pushes the bronchi laterally. Rounding of the left heart border is more typical of left ventricular enlargement, not isolated LA dilation.

**9.** (a) Constrictive pericarditis

A paradoxical increase in jugular venous pressure on inspiration is known as Kussmaul's sign. It is classically associated with conditions that restrict diastolic filling of the right ventricle, such as constrictive pericarditis or restrictive cardiomyopathy. Among the options given, constrictive pericarditis is the prime cause of Kussmaul's sign. Atrial septal defect, aortic regurgitation, and mitral stenosis do not typically produce a raised JVP on inspiration.

**10.** (b) Acute pericarditis

Diffuse ST elevation with an upward concavity ("saddle-shaped") and PR segment depression are classic findings in acute pericarditis. ST elevations in myocardial infarction are typically localized to specific leads reflecting the involved coronary territory and do not usually display widespread upward concavity or PR depression. Reciprocal changes in lead aVR further support pericarditis. Chest pain that improves when sitting upright is another classic feature, though not mentioned here.

**11.** (d) 2, 3 and 4

Though the wording is a bit unusual (since "controller therapies" is generally a term for chronic management), systemic glucocorticoids can be used for short-term control during severe exacerbations, inhaled glucocorticoids are cornerstone long-term controllers, and omalizumab is a controller for severe allergic asthma. Anticholinergics (especially short-acting ipratropium) are primarily quick-relief medications in acute settings rather than standard controllers. Long-acting anticholinergics (e.g., tiotropium) do serve as controllers, but the question likely refers to short-acting forms.

**12.** (a) 1, 2 and 3

Very low pleural fluid glucose is seen in conditions with intense inflammatory or malignant involvement. Pyogenic (infected) pleural effusions or empyema consume glucose due to high metabolic activity of bacteria and leukocytes. Rheumatoid pleuritis is known for extremely low glucose levels, sometimes <30 mg%. Malignant effusions can also have depressed glucose levels. In contrast, hepatic hydrothorax is usually a transudative effusion with relatively normal glucose concentrations. Thus 1, 2, and 3 are correct.

**13.** (d) 1, 2 and 3

Idiopathic Pulmonary Fibrosis (IPF) often presents in older patients (usually over 60) and is characterized by progressive fibrosing interstitial pneumonia. The classic high-resolution CT or radiological pattern is called "usual interstitial pneumonia" (UIP). Clinical features commonly include progressive dyspnea and dry cough, and finger clubbing is frequently observed. All three statements—typical radiological UIP, presence of clubbing, and predilection for older age—are true for IPF.

**14.** (b) 1, 2 and 4

Bronchial asthma characteristically causes an obstructive pattern on spirometry, reflected by a reduced $FEV_1/FVC$ ratio. Air trapping leads to an increased functional residual volume and total lung capacity. A hallmark of reversible airway obstruction is a significant rise in $FEV_1$ after bronchodilator administration—often defined

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as ≥12% and 200 mL improvement. Diffusion capacity is typically normal or near normal in uncomplicated asthma, so statement 3 (reduced diffusion capacity) is not a usual finding.

**15.** (d) 2, 3 and 4

Obstructive sleep apnea (OSA) is strongly associated with factors that narrow or relax the upper airway. Obesity is the most common risk factor. Acromegaly causes tissue/bone overgrowth in the oropharynx, narrowing the airway. Alcohol/sedatives relax pharyngeal muscles, promoting airway collapse. Hyperthyroidism is not typically linked to OSA (hypothyroidism can be). Hence acromegaly, obesity, and alcohol/sedative use (2, 3, and 4) are correct.

**16.** (d) 2, 3 and 4

Acute fatty liver of pregnancy usually arises in the late third trimester (not the first). It is indeed more common in multiple pregnancies, and diagnosis often relies on clinical findings and laboratory data, rendering liver biopsy rarely necessary. Prompt delivery of the fetus is vital once the condition is recognized because continuing the pregnancy may endanger both mother and fetus. Hence statements 2, 3, and 4 are correct.

**17.** (a) 1, 2 and 3

Advanced age (especially >55 years), a high WBC count, and hypocalcemia (low serum calcium) are well-known poor prognostic factors in acute pancreatitis (reflected in Ranson's and other scoring systems). These markers indicate severe inflammation and possible necrosis. Hypercarbia per se is not a classic poor prognostic marker. Other poor prognostic indicators include elevated blood glucose, elevated LDH, and more. Therefore, (1), (2), and (3) correctly indicate worse outcomes.

**18.** (a) 1, 2 and 3

Gallstones and alcohol are the two most frequent causes of acute pancreatitis. Iatrogenic pancreatitis can occur following ERCP (post-ERCP). While many infections (e.g., mumps) have been implicated, Campylobacter jejuni is not a commonly recognized cause of acute pancreatitis. Therefore, the three well-established causes among these options are gallstones, alcohol, and ERCP-related trauma.

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**19.** (b) 1, 2 and 4

Hemochromatosis can be hereditary (primary) or secondary. Thalassemia major and pyruvate kinase deficiency both often require repeated blood transfusions, leading to secondary iron overload. Porphyria cutanea tarda has known associations with iron accumulation. Chronic cor pulmonale does not typically produce hemochromatosis. Patients with these hematological disorders or certain porphyrias can accumulate excess iron, manifesting as secondary hemochromatosis.

**20.** (a) 1, 2 and 3

While H. pylori and NSAIDs are the most common peptic ulcer culprits, other medications can also injure the gastric or duodenal mucosa. Clopidogrel can cause erosive GI lesions, glucocorticoids predispose to peptic ulcers (especially when combined with NSAIDs), and bisphosphonates can cause esophageal/gastric ulcers if not taken with adequate water or while lying down. Colloidal bismuth subcitrate is protective and used in treating peptic ulcer disease rather than causing it.

**21.** (b) 1, 2 and 4

Irritable bowel syndrome (IBS) is characterized by abdominal discomfort or pain associated with altered bowel habits—often diarrhea, constipation, or both—and by bloating, gas, and flatulence. Patients typically do not have bloody stools; the presence of blood usually suggests another pathology such as inflammatory bowel disease. Hence gas/flatulence (1), abdominal pain (2), and diarrhea (4) are classic IBS symptoms, while frank blood in stools (3) is not.

**22.** (d) 1, 2 and 3

To prevent mother-to-child (vertical) transmission of hepatitis B, the newborn should

receive both hepatitis B immunoglobulin (passive immunization) and the hepatitis B vaccine (active immunization) soon after birth. Additionally, pregnant women with very high viral loads (>200,000 IU/mL) are typically placed on antiviral therapy (e.g., tenofovir) during the third trimester. Implementing all three measures significantly reduces perinatal HBV transmission.

**23.** (d) 1, 2 and 3

Conjugated hyperbilirubinemia can cause dark urine, often noticed before overt yellowish discoloration of skin or sclerae. Clinically evident jaundice generally occurs once serum bilirubin exceeds around 2 mg/dL (1.8 mg/dL is close to that threshold). In Gilbert syndrome (mild unconjugated hyperbilirubinemia), episodes of visible jaundice can be precipitated by fasting, stress, or illness. Hence all three statements are correct.

**24.** (b) 1, 2 and 4

IBS is commonly triggered or worsened by stress, presents with recurrent abdominal pain or discomfort, and features altered bowel patterns—often alternating diarrhea and constipation. Typical onset is in younger or middle-aged adults rather than after age 50 (where a new onset of symptoms warrants further investigation for organic pathologies). Thus, stress exacerbation (1), recurrent discomfort (2), and alternating bowel habits (4) reflect IBS.

**25.** (b) Fecal clearance of alpha-1 antitrypsin

Protein-losing enteropathy involves excessive loss of plasma proteins through the gut. Measuring the clearance of alpha-1 antitrypsin in stool is a sensitive, specific test because alpha-1 antitrypsin is neither degraded nor reabsorbed in the intestines. High levels in feces indicate abnormal protein leakage. Hydrogen breath tests are used for carbohydrate malabsorption, fecal calprotectin reflects bowel inflammation, and labeled transthyretin is rarely used compared to alpha-1 antitrypsin clearance.

**26.** (c) 1, 3 and 4

Red blood cell casts are pathognomonic of glomerular hematuria, typically seen in acute glomerulonephritis. They may also appear in systemic vasculitis that involves the renal glomeruli and in malignant hypertension due to severe vascular damage. Interstitial nephritis more commonly presents with white blood cell casts or eosinophiluria rather than RBC casts. Therefore, glomerulonephritis (1), vasculitis (3), and malignant hypertension (4) are associated with RBC casts.

**27.** (c) 1 and 3 only

Essential tremor can indeed present at any age, though it frequently first appears in adulthood. It commonly involves the head (in a "yes-yes" or "no-no" pattern), so statement 2 is incorrect. A well-known clinical feature is improvement of the tremor after consuming a small amount of alcohol. Because the head is often affected, the claim that it is "almost never" involved is false. Hence 1 and 3 are correct.

**28.** (c) 1 and 3 only

Parkinsonism can be induced by agents that reduce dopamine activity or damage dopaminergic neurons. Atypical antipsychotics (e.g., risperidone) block dopamine receptors in the nigrostriatal pathway, causing extrapyramidal symptoms including parkinsonism. MPTP is notorious for selectively destroying nigrostriatal dopaminergic neurons and precipitating Parkinson's disease. Lithium more often causes a coarse tremor, but true parkinsonism is less common compared to the other two. Therefore, statements 1 and 3 are most closely linked to Parkinson's disease.

**29.** (a) 1, 2 and 3

Parkinson's disease is characterized by rigidity, bradykinesia, resting tremor, and postural instability. "Lead pipe" rigidity is a uniform resistance throughout the range of movement, while "cogwheel" rigidity is that same resistance interrupted by tremor-related jerks. A "festinating" (shuffling, accelerating) gait is also classic. Romberg positivity usually indicates a

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sensory/proprioceptive deficit, not Parkinson's disease. Hence 1, 2 and 3 are suggestive of Parkinson's.

**30.** (d) 2, 3 and 4

Idiopathic Parkinson's disease commonly starts asymmetrically (one side more affected initially). Non-motor symptoms—such as hyposmia, constipation, depression, and sleep disturbances—often appear early. Cognition in the early stages is generally intact or only mildly affected, with significant dementia usually arising later. Speech changes such as softening of the voice (hypophonia) and indistinct articulation are also frequently seen. Hence statements 2, 3, and 4 are correct.

**31.** (d) 2, 3 and 4

Levodopa is the gold-standard treatment for Parkinson's disease, helping most motor symptoms (especially bradykinesia and rigidity). However, describing it as "most effective specifically for tremors" can be misleading, as tremor may sometimes respond less dramatically. Only a small fraction of levodopa crosses the blood-brain barrier, with the majority metabolized peripherally. Nausea is common but can be mitigated by peripheral dopamine antagonists like domperidone. Levodopa also can produce psychiatric side effects, including hallucinations and confusion.

**32.** (b) 1, 2 and 4

Strokes can be ischemic or hemorrhagic. Sickle cell disease predisposes to ischemic strokes due to sickled cells blocking small cerebral vessels. Cigarette smoking is a major modifiable risk factor for atherosclerosis and thrombotic events. Atrial fibrillation significantly increases the risk of cardioembolic strokes. Hypofibrinogenemia, however, tends more toward bleeding or coagulopathy issues rather than thrombosis. Hence 1, 2, and 4 are recognized stroke risk factors.

**33.** (b) 1, 2 and 4

Myasthenia gravis is caused by autoantibodies against the post-synaptic acetylcholine receptors (not pre-synaptic) at the neuromuscular junction. Patients typically note muscle weakness that worsens later in the day or after repeated use. Chewing and swallowing become difficult as cranial muscles fatigue. The drug penicillamine can trigger a similar autoimmune phenomenon. Therefore, 1, 2, and 4 are correct, and statement 3 (pre-junctional membrane involvement) is incorrect.

**34.** (d) 1, 2 and 3

Assessment of hepatic (or metabolic) encephalopathy includes both clinical signs and psychometric tests. Flapping tremor (asterixis) is a classic sign of encephalopathy, often noted in liver failure. The number connection test (or trail making test) is a well-known neuropsychological measure of cognitive function in hepatic encephalopathy. Constructional apraxia (tested by having patients draw or construct shapes) can also indicate subtle deficits in mental status. All three can be employed to gauge functional impairment.

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**35.** (d) Transfusion associated GVHD can be prevented by prior irradiation of transfused blood

ABO antigens are carbohydrate moieties (not polypeptides). Platelets are typically stored at room temperature with gentle agitation for a maximum of about 5–7 days, not 35 days. Hemolytic disease of the newborn usually involves maternal IgG, not IgA. Transfusion-related graft-versus-host disease occurs when donor T-lymphocytes attack recipient tissues; irradiation inactivates these lymphocytes, preventing GVHD. Thus, (d) is the only correct statement.

**36.** (c) Dabigatran

Among newer anticoagulants, rivaroxaban and apixaban are direct Factor Xa inhibitors and are given orally. Argatroban is a parenteral direct thrombin inhibitor (often used in heparin-induced thrombocytopenia). Dabigatran etexilate, however, is an orally administered direct thrombin (Factor IIa) inhibitor approved

for stroke prevention in atrial fibrillation and for treatment/prevention of venous thromboembolism. Hence dabigatran is the correct oral direct thrombin inhibitor.

**37.** (d) 1, 2 and 3

Metformin's maximum recommended dose often hovers around 2000 mg/day (though some guidelines permit up to ~2550 mg). A rare but significant adverse effect is lactic acidosis, especially in renal compromise. Chronic use can reduce vitamin B12 absorption, potentially leading to deficiency. Thus all three statements are correct. Metformin is a first-line therapy in type 2 diabetes, but caution is advised in patients with significantly impaired renal function.

**38.** (c) 1, 3 and 4

Pituitary-derived growth hormone drives linear bone growth, so statement 1 is correct. A normal bone age with short stature usually suggests a familial or constitutional cause (not typically a hormonal defect), making statement 2 incorrect. The common formula to estimate final height in boys is mid-parental height (in cm) plus ~6.5 cm. Lastly, recombinant GH therapy indeed restores near-normal growth velocity in children who are growth hormone deficient. Thus 1, 3, and 4 are correct.

**39.** (c) Sitagliptin

Insulin, sulfonylureas (e.g., glimepiride), and meglitinides (e.g., repaglinide) all enhance insulin release or action, and can lead to hypoglycemic episodes. Sitagliptin, a DPP-4 inhibitor, boosts postprandial incretin levels, leading to glucose-dependent insulin secretion; it rarely causes clinically significant hypoglycemia unless combined with other hypoglycemic agents. Therefore, among these options, sitagliptin has the lowest risk of triggering hypoglycemia.

**40.** (a) 1, 2 and 3

Hypomagnesemia can impair PTH release and action, causing hypocalcemia. Chronic alcoholism often leads to poor magnesium and nutritional status, again producing low calcium. Pseudohypoparathyroidism is characterized by end-organ (bone and kidney) resistance to PTH, thus manifesting as hypocalcemia. Paget's disease primarily involves abnormal bone remodeling and usually normal serum calcium levels (unless other factors are present). Hence 1, 2, and 3 are plausible causes of low calcium.

**41.** (d) 2, 3 and 4

Common pharmacologic treatments for hirsutism target androgen production or action. Low-dose estrogen (in combined oral contraceptives) helps reduce free testosterone, while finasteride (a 5α-reductase inhibitor) and spironolactone (an androgen receptor blocker) both directly counter androgen effects. Amiloride is not a standard anti-androgen for hirsutism. Hence oestrogen, finasteride, and spironolactone are recognized options.

**42.** (b) Glargine

Insulin glargine is a long-acting, "peakless" insulin analog typically dosed once daily to provide basal coverage. In contrast, insulin aspart and insulin lispro are rapid-acting formulations for mealtime glucose control, and regular insulin is "short-acting," used typically 30 minutes before a meal or for intravenous infusion in hospital settings.

**43.** (d) Potassium repletion

During diabetic ketoacidosis (DKA), total body potassium is often low despite normal or even high serum potassium on presentation. Once insulin therapy and IV fluids begin, potassium shifts into cells and can precipitate a rapid fall in serum potassium. Manifestations include muscle weakness or paralysis ("inability to lift limbs"). Therefore, the next critical step is to evaluate and correct hypokalemia.

**44.** (b) Na ~80, K 20, Cl ~70, Energy ~54 kcal/L

The newer reduced osmolarity WHO Oral Rehydration Solution (ORS) has approximately 75–80 mmol/L sodium, 20 mmol/L potassium, about 75 mmol/L glucose (13.5 g/L, providing ~54 kcal/L), and a total osmolarity of ~245 mOsm/L. This improved formula reduces the

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risk of hypernatremia and decreases stool output in diarrheal diseases.

45. (d) 1, 2 and 3

In tuberculous meningitis, direct AFB smears of CSF are often negative because the bacterial load is low. Culture on Lowenstein–Jensen medium or similar systems (e.g., MGIT) remains the definitive "gold standard," though it is slow. The Xpert MTB/RIF (GeneXpert) assay provides a rapid molecular test with reasonable sensitivity and good specificity, and is recommended as an initial test for suspected TB meningitis. Thus all three statements are valid.

46. (a) Denosumab

Denosumab is a monoclonal antibody against RANKL given subcutaneously (usually every 6 months) to reduce osteoclast activity and bone resorption. Alendronate is an oral bisphosphonate, zoledronic acid is administered intravenously (yearly), and raloxifene (an estrogen receptor modulator) is taken orally.

47. (b) 1, 2 and 4

Osteoporosis is largely asymptomatic until a fracture occurs (often hip, wrist, or vertebra). Vertebral fractures may manifest simply as reduced height or kyphosis without acute pain. Smoking is actually a known risk factor, not protective. Incidentally noted decreased bone density on X-ray or DEXA scanning is also a common way osteoporosis is first recognized. Hence 1, 2, and 4 are correct.

48. (c) 1, 3 and 4

Ankylosing spondylitis often presents with inflammatory back pain, classically worse in the morning and improving with activity—so early morning pain/stiffness is common, not rare, making statement 2 incorrect. "Bamboo spine" describes the characteristic radiographic finding. Acute anterior uveitis (iritis) is the most frequent extra-articular complication. The condition has a strong male predominance. Hence 1, 3, and 4 are correct.

49. (a) 1, 2 and 3

Carpal Tunnel Syndrome (median nerve entrapment) classically presents with nocturnal pain and paresthesias (1) and can produce weakness in thumb abduction (2), since the median nerve innervates the abductor pollicis brevis. Although the palmar cutaneous branch typically branches before the tunnel (thus often sparing central palm sensation), exam questions commonly simplify it as "loss of sensation" in the lateral palmar region (3). By contrast, atrophy of the _thenar_ eminence (not hypothenar) is expected.

50. (c) 1, 3 and 4

Routine monitoring of rheumatoid arthritis activity focuses on clinical and laboratory parameters (e.g., ESR, CRP), patient-reported pain scores (like a visual analogue scale), and composite indices such as the DAS28 (Disease Activity Score-28 joints). While serial X-rays are used to gauge long-term structural damage (erosion, joint space narrowing), they are less sensitive for short-term fluctuations in disease "activity." Therefore, pain assessment, DAS28 scoring, and inflammatory markers (ESR) are the standard measures of current disease activity.

NODIA

51. (a) Cerebral toxoplasmosis

Cerebral toxoplasmosis in HIV typically emerges when the CD4 count falls below ~100 cells/μL. Tuberculosis and herpes zoster can appear at higher CD4 counts (though they become more frequent with further immunosuppression), and Pneumocystis pneumonia is more common under CD4 <200 cells/μL (though occasionally may occur slightly above 200). Toxoplasmosis is particularly tied to advanced immunodeficiency, making it least likely above 100 cells/μL among these choices.

52. (a) Cortical sensation

Graphesthesia (ability to recognize writing on the skin by touch) and stereognosis (ability to identify objects by touch) both rely on intact dorsal columns _and_ functioning sensory cortex. They're typically classified as "cortical (discriminative) sensory" tests because the

final integration/recognition occurs in the parietal lobe. While basic vibration/position sense tests the posterior column, graphesthesia and stereognosis specifically test higher-level cortical sensory processing.

**53.** (c) Urgent pericardiocentesis

Raised jugular venous pressure, muffled (or absent) heart sounds, and hypotension strongly suggest cardiac tamponade (Beck's triad). In the context of trauma/blast injury, penetrating injury to the heart or hemorrhagic effusion can rapidly cause tamponade physiology. The immediate life-saving maneuver is pericardiocentesis to decompress the pericardium. Needle thoracostomy is for suspected tension pneumothorax (usually with absent breath sounds on one side, not absent heart sounds).

**54.** (d) Organophosphorus poisoning

Excess muscarinic symptoms (salivation, lacrimation, urination, defecation, GI upset, emesis) plus nicotinic signs (muscle fasciculations, weakness) and CNS involvement strongly suggest organophosphate poisoning, which inhibits acetylcholinesterase. Miosis, bronchorrhea, and sweating are hallmark cholinergic signs. Corrosives cause oropharyngeal burns; phosphides typically cause severe metabolic derangements but not classic cholinergic features.

**55.** (c) Copper sulphate poisoning

In acute copper sulphate poisoning, patients present with GI symptoms (abdominal pain, vomiting, diarrhea), possible hemolysis, and characteristic methemoglobinemia (which can manifest as cyanosis unresponsive to oxygen). Aluminum or zinc phosphide poisonings primarily cause severe shock, metabolic acidosis, and do not characteristically produce methemoglobinemia. Lead poisoning is typically more chronic and does not commonly present with acute methemoglobinemia.

**56.** (b) 1, 2 and 4

The SOFA score evaluates six organ systems:

1. Respiratory function ($PaO_2/FiO_2$),
2. Coagulation (platelet count),
3. Liver (bilirubin),
4. Cardiovascular (MAP or vasopressor requirement),
5. CNS (Glasgow Coma Scale),
6. Renal (creatinine or urine output).

White blood cell count is _not_ one of the standard SOFA parameters. Thus bilirubin (1), platelets (2), and creatinine (4) are included.

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**57.** (b) Acute pancreatitis

Purtscher's retinopathy is a rare form of occlusive microvasculopathy typically seen after severe trauma or in association with acute pancreatitis. It is characterized by retinal whitening and hemorrhages around the optic disc ("Purtscher flecken") and can cause acute vision loss. It is not usually linked with peritonitis, cholecystitis, or fulminant hepatic failure.

**58.** (d) 1, 2 and 4

Zollinger-Ellison syndrome's classic triad is: (1) severe/recurrent peptic ulceration, (2) markedly increased gastric acid secretion, and (3) a gastrin-secreting tumor—often located in the pancreas or duodenum (i.e., a pancreatic neuroendocrine tumor). Because a gastrinoma is essentially a type of pancreatic neuroendocrine tumor, options 1, 2, and 4 effectively describe the characteristic triad.

**59.** (b) 20–25%

REM sleep typically occupies about one-fifth to one-quarter of total sleep in healthy young adults. Stage distributions can vary with age and individual factors, but ~20–25% REM is the usual range. The remainder is primarily non-REM stages (N1, N2, N3).

**60.** (a) 1, 2 and 3

Commonly recognized medications associated with pseudotumor cerebri (idiopathic intracranial hypertension) include tetracycline antibiotics (e.g., minocycline), excessive Vitamin A or retinoids (e.g., isotretinoin), and growth hormone therapy. While a variety of other agents have been implicated, sulfonamides are less classic. The most definitively proven culprits

among those listed are tetracyclines, retinoids, and Vitamin A.

**61.** (c) Type-III

Farmer's lung is a prototype of hypersensitivity pneumonitis caused by inhaled organic antigens (moldy hay). It primarily involves immune complex deposition (Type III hypersensitivity), with an additional Type IV (delayed T-cell–mediated) component. However, classically it is taught as a Type III–predominant reaction in Gell and Coombs terms.

**62.** (d) Collecting Ducts

While some hormonal influences (e.g., aldosterone) begin in the late distal tubule, the collecting ducts (particularly the cortical collecting duct) are the principal sites of hormonal regulation for both sodium (via aldosterone) and water (via antidiuretic hormone). Final urine concentration and electrolyte excretion are fine-tuned here.

**63.** (c) Hyaline casts in urine sediment

In pre-renal azotemia, the kidney parenchyma is not intrinsically damaged. Urinalysis often reveals benign or "hyaline" casts, reflecting concentrated urine. Fractional excretion of sodium is usually <1% (indicating avid sodium reabsorption), whereas >1% typically indicates intrinsic renal damage. Renal tubular epithelial cell casts or "muddy brown" granular casts suggest acute tubular necrosis.

**64.** (c) Diabetic nephropathy

Diabetes mellitus is the single leading cause of CKD worldwide, especially in developed countries. Diabetic nephropathy typically presents with persistent albuminuria, progressive decline in GFR, and is a major cause of end-stage renal disease. Hypertension, glomerulonephritis, and hereditary cystic diseases also contribute but are less common than diabetic nephropathy overall.

**65.** (d) 1, 3 and 4

Contrast-induced nephropathy is more likely in patients with diabetes, pre-existing renal insufficiency, or dehydration. Adequate hydration before and after contrast administration is crucial to reduce risk. Metformin is usually stopped around the time of contrast in renal impairment to lower the risk of lactic acidosis if kidney function worsens. Although N-acetylcysteine has been studied for prophylaxis, it does not reliably "fully reverse" renal injury; thus statement 2 is overstated.

**66.** (c) Angiotensin II mediated vasoconstriction

Renal autoregulation comprises two main mechanisms: the myogenic response (primarily afferent arteriole) and tubuloglomerular feedback (via the juxtaglomerular apparatus, again mostly modulating afferent tone). Angiotensin II, part of the renin-angiotensin-aldosterone system, preferentially constricts the efferent arteriole, thereby helping maintain GFR when perfusion pressure is reduced.

**67.** (a) 1, 2 and 3

Nephrotic syndrome is characterized by heavy proteinuria and hypoalbuminemia. The liver compensates by increasing protein (including lipoprotein) synthesis, leading to hyperlipidemia (1). Patients often lose multiple serum proteins, including immunoglobulins and antithrombin III, so globulin levels may be low (2) and the hypercoagulable state arises partly from decreased antithrombin III (so 4 is incorrect). Reduced effective circulating volume triggers RAAS activation, elevating aldosterone levels (3).

**68.** (a) Sixth amino acid–glutamic acid is replaced by valine

The hallmark mutation in sickle cell disease is a single base substitution in the β-globin gene that changes the sixth amino acid from glutamic acid (hydrophilic) to valine (hydrophobic). This alteration causes hemoglobin S (HbS), which polymerizes under low oxygen tension, leading to red blood cell sickling.

**69.** (c) 1, 3 and 4

A high reticulocyte production index indicates robust bone marrow response to ongoing RBC loss or hemolysis. Sickle cell disease

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(1) and G6PD deficiency (3) both involve hemolysis, while acute blood loss (4) prompts compensatory reticulocytosis. In contrast, vitamin B12 deficiency (2) causes ineffective erythropoiesis, so the reticulocyte count usually remains low or inappropriately normal for the degree of anemia.

**70.** (b) Lenalidomide, Bortezomib, Dexamethasone

Lenalidomide (an immunomodulatory drug), bortezomib (a proteasome inhibitor), and steroids (e.g., dexamethasone) are a well-established triplet regimen for multiple myeloma, including relapsed cases. Infliximab or rituximab are more relevant to autoimmune conditions or B-cell lymphomas, respectively, and standard chemotherapy combinations like methotrexate or doxorubicin are not mainstays for relapsed myeloma.

**71.** (a) 1, 2 and 3

In heparin-induced thrombocytopenia (HIT), the primary step is to discontinue heparin and initiate a non-heparin anticoagulant such as a direct thrombin inhibitor (e.g., lepirudin, argatroban) or a factor Xa inhibitor (fondaparinux, rivaroxaban). Warfarin is contraindicated initially because it can transiently lower protein C levels, increasing thrombosis risk. Only after platelet counts recover can warfarin be safely introduced.

**72.** (d) 1, 2 and 3

Free erythrocyte protoporphyrin (FEP) or zinc protoporphyrin rises when heme synthesis is impaired by inadequate iron supply. This occurs in absolute iron deficiency and also in functional/"relative" iron deficiency (as in anemia of chronic disease). Lead poisoning also disrupts heme synthesis, causing elevated protoporphyrin levels. Thus all three scenarios (1, 2, and 3) can present with increased RBC protoporphyrin.

**73.** (a) 1, 2 and 3

In the earliest phase ("negative iron balance") of iron deficiency, the most sensitive indicators are depletion of bone marrow iron stores (1) and low serum ferritin (3). Percent transferrin saturation (2) also begins to drop. Total iron-binding capacity (TIBC) often rises eventually, but a clear increase may appear slightly later. Hence the earliest laboratory derangements primarily involve bone marrow iron, ferritin, and transferrin saturation.

**74.** (d) 1, 2, 3 and 4

G6PD deficiency renders red cells more vulnerable to oxidative stress. Certain drugs (e.g., primaquine, dapsone, cotrimoxazole, nitrofurantoin) can precipitate hemolysis by generating reactive oxygen species that RBCs cannot neutralize effectively without sufficient G6PD. All four listed agents are recognized triggers of hemolytic crises in G6PD-deficient individuals.

**75.** (b) Chronic myeloid leukemia

Massive splenomegaly, extremely elevated WBC counts (often 100,000/μL), high platelet counts, and a gradual clinical course are hallmark features of chronic myeloid leukemia (CML). Patients frequently complain of fatigue, weight loss, and abdominal fullness from splenomegaly. By contrast, CLL often presents with lymphocytosis in older patients, and acute leukemias typically have a shorter course.

**76.** (c) 1, 3 and 4

Known risk factors for type 2 diabetes include a family history of diabetes (1), lack of exercise (3), and conditions such as PCOS (4). Overweight/obesity also significantly contributes; "underweight" is not a recognized risk factor. Patients who have polycystic ovary syndrome often exhibit insulin resistance and thus are more prone to developing type 2 diabetes.

**77.** (c) 1, 3 and 4

Most women with GDM regain normal glucose tolerance after delivery (1). However, their children do have an increased risk of future metabolic disorders, making statement 2 incorrect. GDM typically arises in the second or third trimester (3), largely because pregnancy

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hormones cause increasing insulin resistance (4). Thus 1, 3 and 4 are correct.

**78.** (c) Primary thyrotoxicosis

Undetectable TSH with elevated T3 and T4 strongly indicates hyperthyroidism (thyrotoxicosis) of primary origin. In primary hyperthyroidism, the thyroid gland is overproducing hormone, which suppresses pituitary TSH. Transient thyroiditis can show fluctuating levels, but typically T4 may be disproportionately high relative to T3 early on. Overtreatment of hypothyroidism can sometimes cause similar findings, yet T4 and T3 patterns—and clinical context—usually clarify the cause.

**79.** (a) Psuedohyponatremia

Markedly elevated triglycerides can artificially lower serum sodium readings on certain laboratory analyzers, leading to "pseudohyponatremia." Essentially, the fraction of plasma occupied by lipids increases, leaving less aqueous phase per unit volume, and this skews some measurement techniques. It is not a true reduction in sodium concentration and corrects with more modern direct ion-selective methods.

**80.** (c) 1, 3 and 4

When correcting vitamin D deficiency, serum calcium usually recovers faster than parathyroid hormone (PTH) normalizes (1). Combining vitamin D with calcium is standard to optimize bone health (3). Over-replacement can cause hypercalcemia and lead to nephrolithiasis (4). While monitoring calcium levels (rather than routinely checking "serial vitamin D levels") is typically done, true vitamin D toxicity remains relatively uncommon, making statement 2 (as worded) less accurate.

**81.** (c) Serum i PTH levels

The most important initial step in assessing hypercalcemia is measuring intact parathyroid hormone (PTH). If PTH is high or inappropriately normal, it suggests primary hyperparathyroidism or familial variants. If PTH is suppressed, further tests (e.g., vitamin D, malignancy workup) guide the differential. Checking 24-hour urine calcium or phosphate can help subsequently, but the key first line is to distinguish PTH-mediated from non-PTH–mediated causes.

**82.** (d) 1, 2, 3 and 4

In HIV-infected individuals, multiple pathologies can cause lymphadenopathy. Kaposi's sarcoma (1) can involve lymph nodes; lymphoma (2) - especially Non-Hodgkin's—often presents with node enlargement; tuberculosis (3) frequently involves lymph nodes (scrofula); and persistent generalized lymphadenopathy (4) is itself a recognized entity in HIV. So all four conditions are valid causes of lymphadenopathy in HIV patients.

**83.** (c) Voriconazole

In neutropenic cancer patients, nodular lung lesions with a "halo sign" or "air-crescent sign" on CT are highly suggestive of invasive pulmonary aspergillosis. The recommended first-line therapy for invasive aspergillosis is voriconazole. Colistin targets resistant gram-negative bacterial infections; GM-CSF helps boost WBC counts but is not an antifungal; and piperacillin-tazobactam addresses bacterial pathogens.

**84.** (c) Streptococcus pneumoniae

Postsplenectomy patients are vulnerable to overwhelming sepsis by encapsulated organisms, particularly Streptococcus pneumoniae (the most common and most dangerous). Vaccinations (pneumococcal, meningococcal, and H. influenzae type b) are recommended, as well as prophylactic penicillin in some cases. While other bacteria can also be problematic, S. pneumoniae stands out as the most critical to prevent in asplenic individuals.

**85.** (c) Cytomegalovirus esophagitis

In HIV patients, large linear or "serpiginous" ulcers in the distal esophagus, often with relatively normal adjacent mucosa, are classic for CMV esophagitis. Herpes simplex typically causes small, deep "punched-out" ulcers.

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Candida esophagitis often shows white plaques or more diffuse involvement. GERD ulcers are not usually described as "serpiginous" and do not typically appear in an otherwise normal mucosa with such a pattern.

**86.** (b) PGU refers to non-gonococcal urethritis in men treated earlier with single dose of penicillin

"Post gonococcal urethritis" arises when a man is treated for gonorrhea (traditionally with a single dose regimen that covers Neisseria gonorrhoeae) but concurrently has another organism—commonly Chlamydia trachomatis—that remains untreated. After the gonorrhea is eradicated, urethritis persists or recurs, now due to a "non-gonococcal" pathogen. Hence the correct definition is (b). Combination therapy (e.g., ceftriaxone plus doxycycline or azithromycin) is recommended to prevent this scenario.

**87.** (a) Streptomycin and Doxycycline

The classical "gold standard" regimen for adult brucellosis is Doxycycline (usually 6 weeks) plus Streptomycin (2–3 weeks). This combination provides high efficacy and reduces relapse rates. Alternatives include doxycycline plus rifampin, particularly if streptomycin injections are not feasible, but historically the streptomycin–doxycycline combination is considered most definitive.

**88.** (c) Blood transfusion

The risk of HIV transmission from a single transfusion of infected blood can exceed 90%, making it the highest-risk exposure route in this list. Mother-to-child transmission (such as via vaginal delivery) is significant overall but typically depends on maternal viral load and other factors. Vaginal intercourse and needlestick injuries carry lower—but still clinically important—single-exposure risks.

**89.** (d) 3 and 4

Vitamin C (ascorbic acid) is heat labile, not heat stable, so statement 1 is incorrect. Perifollicular hyperkeratosis and corkscrew hairs are classic features of scurvy (3). Infants on exclusively boiled milk develop vitamin C deficiency (4) because heating destroys ascorbic acid. The assertion about platelets being "poor in ascorbate" is less clinically relevant here, and overshadowed by the known truth of statements 3 and 4.

**90.** (c) 1, 3 and 4

Cutaneous synthesis (via sunlight exposure) is indeed the principal natural source of vitamin D (1). Seasonal and latitudinal factors reduce UVB availability in winter, lowering vitamin D synthesis (3). Summer sun exposure can build body stores that are tapped in winter (4). However, vitamin D deficiency typically manifests with proximal muscle weakness rather than purely distal, making statement 2 inaccurate for most classic descriptions.

**91.** (a) 1, 2 and 3

Standard therapies for acne include topical benzoyl peroxide (which helps reduce bacteria and pore blockage), topical antibiotics (e.g. clindamycin), and in moderate-to-severe cases, oral isotretinoin. Oral ivermectin is mainly used in certain parasitic infections and sometimes rosacea, not for typical acne vulgaris. Therefore, the first three are recognized mainstays of acne treatment.

**92.** (d) Radiotherapy

Scarring (cicatricial) alopecia occurs when the hair follicles are destroyed and replaced with scar tissue. Radiotherapy can permanently damage follicles, causing scarring alopecia. By contrast, androgenic alopecia and alopecia areata are non-scarring forms of hair loss. Syphilis typically causes "moth-eaten" hair loss but not true cicatricial alopecia in the usual sense.

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**93.** (a) 1, 2 and 3

Established mood stabilizers include lithium, valproic acid, lamotrigine, and carbamazepine. They help regulate manic and depressive episodes in bipolar disorder. Propranolol, a beta-blocker, can aid with anxiety or tremors but is not classified as a standard mood stabilizer. Thus

**17.** Which of the following are the non-metastatic extra-pulmonary manifestations of lung cancer ?
1. Carcinoid syndrome
2. Nephrotic syndrome
3. Horner's syndrome
4. Lambert-Eaton syndrome

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**18.** A 60-year-old obese person (weighing 110 kg) has been complaining of excessive sleepiness in day time, morning headache, irritability and mood disturbances. Patient also has history of dry mouth, nocturnal heartburn, diaphoresis of the chest and neck. Which one of the following will be the best investigation to diagnose the patient ?
(a) Ambulatory Blood Pressure Monitoring (ABPM)
(b) 24-hour Holter Monitoring
(c) Echocardiography
(d) Overnight Polysomnogram

**19.** Which of the following drugs trigger bronchial asthma ?
1. Sulfonamides
2. Aspirin
3. ACE inhibitors
4. Beta blockers

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**20.** A patient with Crohn's disease underwent ileal resection. Which of the following complications may develop in this patient ?
1. Oxalate rich renal calculi
2. Diarrhoea
3. Fat malabsorption
4. Hypernatremia

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**21.** Protein losing enteropathy due to obstruction of intestinal lymphatic vessels is seen in which of the following conditions ?
1. Intestinal lymphangiectasia
2. Constrictive pericarditis
3. Eosinophilic gastroenteritis
4. Whipple's disease

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**22.** Which one of the following viruses is associated with development of Acute Liver Failure and high mortality in pregnancy?
(a) Hepatitis A virus
(b) Hepatitis E virus
(c) Hepatitis C virus
(d) Hepatitis B virus

**23.** Consider the following statements with regard to 'Anorexia of Aging':
1. Declining chemosensory function (smell and taste)
2. Reduced efficiency of chewing
3. Slowed gastric emptying
4. Alterations in the neuro-endocrine axis

Which of the above statements are associated with early satiety and weight loss in elderly?
(a) 3 and 4 only
(b) 1, 2 and 4 only
(c) 1, 2 and 3 only
(d) 1, 2 and 3 only

**24.** Consider the following statements:
1. Type-1 HRS (Hepato-Renal Syndrome) is characterized by a rapid deterioration in renal function, within 1 – 2 weeks of presentation.

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5. Hypoxia
6. Hydrogen ion (acidosis)
7. Hypokalemia or hyperkalemia (4)
8. Hypothermia (not hyperthermia)

Hence pericardial tamponade, pulmonary embolism, and electrolyte disturbances (hypokalemia) are classic correctable contributors.

**102.** (c) Clinical jaundice since birth

Physiological neonatal jaundice typically appears after the first 24 hours (commonly day 2 or later). If jaundice is evident "since birth" or within the first 24 hours, it strongly suggests a pathologic process (e.g., hemolytic disease, infection, genetic cause). While pallor, hepatosplenomegaly, or cephalhematoma might also raise suspicion, the earliest and most definitive red flag for pathological jaundice is its onset at or near birth.

**103.** (a) Clinical criteria only

Autism Spectrum Disorder (ASD) is chiefly a clinical diagnosis, guided by detailed developmental history, behavioral observations, and standardized diagnostic criteria (e.g., DSM-5). While genetic tests or neuroimaging may sometimes help identify associated conditions or rule out other pathologies, they are not required for the core diagnosis. Thus, diagnosis relies on clinical evaluation of social communication challenges, restricted interests, and repetitive behaviors.

**104.** (a) Nevirapine

Under many prevention of mother-to-child transmission (PMTCT) protocols, single-dose nevirapine is administered to newborns (and mothers) to significantly reduce vertical HIV transmission. Other drugs, such as Stavudine, Indinavir, or Ritonavir, are antiretroviral agents but are not typically used in that immediate single-dose newborn prophylaxis program.

**105.** (d) Human milk contains omega 2 and omega 6 (very long chain) fatty acids

Human breast milk has a lower protein content than cow's milk, so (b) is incorrect. It actually _does_ contain taurine and cysteine (c is incorrect). Lactose content of human milk averages around 7 g/dL, not 5 g/dL (making (a) misleading). One clear advantage of breast milk is its supply of long-chain polyunsaturated fatty acids (e.g., omega-6 [arachidonic acid] and omega-3 [DHA]), crucial for brain and retinal development. Hence statement (d) is the most accurate.

**106.** (a) 1, 2 and 3

By two years, children typically have a vocabulary of around 50 (to 200) words, start combining two words ("mommy go"), and may begin using simple pronouns like "me" or "mine." They do occasionally echo new or interesting words. Explicitly stating their own name on request is usually more consistent with a slightly older child (closer to age 3). Hence items 1, 2, and 3 align best with typical 2-year-old language milestones.

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**107.** (a) 1, 2 and 3

Denver II (DDST), Ages & Stages Questionnaire (ASQ), and Parents' Evaluation of Developmental Status (PEDS) are widely recognized screening tools for early detection of developmental delays. The Bayley Scales of Infant and Toddler Development, however, is more comprehensive and typically considered an _assessment_ or _ diagnostic_ tool rather than a routine screener. Thus 1, 2, and 3 are screening instruments; 4 is more detailed.

**108.** (d) 2, 3 and 4

The classic King's College Hospital criteria for acute liver failure from paracetamol include:

1. Arterial pH < 7.3 (after resuscitation), or
2. All of the following: Grade III/IV encephalopathy, INR 6.5 (often PT 100 sec), and creatinine 3.4 mg/dL.

Extremely high transaminases are common but not an official standalone threshold for transplant referral. Hence 2 (acidemia), 3 (severe coagulopathy), and 4 (renal dysfunction) are part of the recognized triggers.

**109.** (b) fIPV is one-fifth of the I/M dose of IPV

Fractional IPV (fIPV) given intradermally uses about 1/5 the full intramuscular IPV dose. This dose-sparing strategy has been adopted in some settings to extend vaccine supplies while maintaining adequate immunogenicity. Hence statement (b) is the recognized fraction.

**110.** (c) The grassroots health worker makes 6 home visits

Under the Home-Based Care of Young Child (HBYC) initiative, the ASHA worker (or community health volunteer) conducts multiple home visits—commonly 6—at key intervals from about 42 days (postnatal) through 15 months of age to monitor growth, nutrition, immunization, and overall health. This is an expansion of the earlier Home-Based Newborn Care (HBNC). The other statements listed are either incorrect specifics or incomplete timelines.

**111.** (a) Iron

Common toxic causes of an elevated anion gap metabolic acidosis include "MUDPILES": Methanol, Uremia, Diabetic ketoacidosis, Propylene glycol/Paraldehyde, Isoniazid/Iron, Lactic acidosis, Ethylene glycol, and Salicylates. Iron overdose can cause severe lactic acidosis and shock, leading to a high anion gap. By contrast, digoxin, rifampicin, or beta blockers do not typically present with that classic anion gap acidosis.

**112.** (b) Respiratory rate more than 60/min

A newborn's normal respiratory rate is about 30–60 breaths per minute. Exceeding 60/min can signal respiratory distress or infection and is considered a significant warning sign. A mild drop in temperature between 36.0–36.5 °C is borderline low (mild hypothermia), but guidelines commonly highlight <36 °C as dangerous. A heart rate of 120/min is within normal range (120–160 bpm). Losing up to 7–10% body weight in the first week is physiologic and usually regains by 2 weeks.

**113.** (b) 2 and 3

Permanent canines (2) and premolars (3) typically erupt around 10–12 years of age in girls, which often overlaps with the timing of menarche (the first menstrual period, commonly age ~11–13). Central/lateral incisors and first molars appear much earlier in childhood, while second/third molars tend to erupt later. Hence canines and premolars correspond most closely to the average age of menarche.

**114.** (a) Phenobarbitone

Urinary alkalinization (raising urine pH) promotes ionization of weak acids like phenobarbital, trapping them in the renal tubules ("ion trapping") and enhancing excretion. Lithium, benzodiazepines (e.g., alprazolam), and phenytoin do not respond well to alkalinization for clearance. Salicylates are another classic example of a weak acid amenable to forced alkaline diuresis.

**115.** (c) Oral N-acetyl cysteine

Acetylcysteine (NAC) is the specific antidote for paracetamol (acetaminophen) toxicity. If given within 8–10 hours of ingestion, it drastically reduces the risk of hepatotoxicity by replenishing glutathione stores. Although activated charcoal may be considered if the child presents very early (within ~1 hour), NAC remains the key initial step for any potentially significant ingestion, especially when beyond one hour. Induced vomiting and alkaline diuresis are not standard in paracetamol overdose.

**116.** (b) Atropine

Organophosphates inhibit acetylcholinesterase, causing an accumulation of acetylcholine with prominent muscarinic symptoms (salivation, lacrimation, urination, defecation, GI upset, bradycardia, etc.). Atropine blocks muscarinic receptors and thus quickly relieves these cholinergic (muscarinic) manifestations. Pralidoxime (2-PAM) helps restore cholinesterase activity (mainly addressing nicotinic symptoms), but atropine remains the primary agent for muscarinic toxicity reversal.

**117.** (d) Mefenamic acid

Mefenamic acid (an NSAID) can, in rare instances, cause methemoglobinemia—where hemoglobin is converted to methemoglobin that cannot bind oxygen normally. This leads to low

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oxygen saturation unresponsive to supplemental oxygen, while the measured $PaO_2$ remains normal on arterial blood gas (a classic "saturation gap"). Drugs like dapsone, local anesthetics, nitrates, and certain NSAIDs are implicated. The other listed medications do not commonly produce this acute methemoglobinemia picture.

**118.** (a) 1, 2 and 3

Core features of Autism Spectrum Disorder include onset in early childhood (typically before age 3), communication deficits (both verbal and nonverbal/gestural), and restricted, repetitive behaviors. "Tangential speech" alone is not a defining criterion; ASD communication deficits vary widely but center on difficulty with reciprocal social interaction and language skills. Thus 1, 2, and 3 capture the essential ASD features.

**119.** (a) DPT, Hepatitis B, Measles, MMR vaccines

In routine immunization storage (especially in a standard refrigerator rather than a specialized ILR/freezer system), the top rack at about 2–8 °C (or 4–10 °C, per the question) is generally reserved for vaccines that are freeze-sensitive (e.g., DPT, Hepatitis B) but need refrigeration. Although measles and MMR are freeze-dried and can tolerate freezing, they are commonly placed in the refrigerator compartment in practice. By contrast, BCG and OPV are often stored in the freezer compartment or lower rack depending on local guidelines.

**120.** (c) RBSK (Rashtriya Bal Swasthya Karyakram)

The Rashtriya Bal Swasthya Karyakram (RBSK) focuses on early detection and management of the "4 Ds": Defects at birth, Diseases in children, Deficiencies, and Developmental delays (including disabilities). Under this program, children up to 18 years of age are screened at schools/health centers, aiming to intervene early. IMNCI targets childhood illness management; ICDS addresses overall child development and nutrition; and JSSK ensures free services for pregnant women and sick newborns.

END

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(d) 1, 3 and 4

**32.** Asymptomatic bacteriuria is defined as the presence of more than :
(a) $10^5$ organisms/mL in the urine of apparently healthy asymptomatic patients.
(b) $10^4$ organisms/mL in the urine of apparently healthy asymptomatic patients.
(c) $10^3$ organisms/mL in the urine of apparently healthy asymptomatic patients.
(d) $10^2$ organisms/mL in the urine of apparently healthy asymptomatic patients.

**33.** Renal transplant offers the best chance of long-term survival in ESRD and is cost-effective. Which one of the following is not a contraindication to renal transplantation?
(a) Active malignancy
(b) Children less than one year
(c) Adults more than 75 years
(d) Diabetes mellitus

**34.** Which of the following are the mechanisms for anemia in Chronic Kidney Disease ?
1. Deficiency of erythropoietin
2. Folate and Vitamin B12 deficiency
3. Toxic effects of uraemia on bone marrow
4. Reduced utilization of dietary iron

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**35.** The leading cause of Chronic Kidney Disease (CKD) globally is :
(a) Diabetic nephropathy
(b) Glomerulonephritis
(c) Hypertension-associated CKD
(d) Polycystic kidney disease

**36.** The presence of Beevor's sign on neurological examination is characteristic of spinal cord lesion at which one of the following levels ?
(a) T3 – T4
(b) T7 – T8
(c) T9 – T10
(d) None of the above

**37.** Which one of the following statements is correct regarding lower motor neuron type of lesion ?
(a) Fasciculation is absent.
(b) Deep tendon reflexes are increased.
(c) Clonus is present.
(d) Plantar reflex shows flexor response.

**38.** Which one of the following is the single strongest risk factor for dementia ?
(a) Increasing age
(b) Alcoholism
(c) Positive family history
(d) Systemic illness

**39.** Massive retinal hemorrhage with 'blood and thunder' appearance and vision loss is caused by which of the following ?
(a) Central retinal artery occlusion
(b) Central retinal vein occlusion
(c) Hypertensive retinopathy
(d) Anterior optic neuropathy

**40.** Visual hallucination is characteristic of which type of dementia ?
(a) Diffuse Lewy body dementia
(b) Frontotemporal dementia
(c) Alzheimer's dementia
(d) Vascular dementia

**41.** A 37-year-old mother of two children has bilateral headache that worsens with emotional stress; pain is less severe in the early part of the day but becomes more severe in the evening; there is tenderness over skull vault. Both children are not doing well in school. What is the most likely diagnosis?
(a) Cluster headache
(b) Tension type headache
(c) Trigeminal neuralgia
(d) Migraine

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**9.** Which one of the following statements is correct regarding Opening Snap in cardiac auscultation ?
(a) It is a high pitched diastolic sound.
(b) It is due to opening of stenosed aortic valve.
(c) It indicates pulmonary arterial hypertension.
(d) It precedes the aortic component of second heart sound.

**10.** A 35-year-old labourer worker consulted a local medical practitioner for recurrent attack of chest pain. His elder brother had similar complaint and died at the age of 40 years. The labourer worker was advised to take sublingual nitroglycerin at the time of chest pain. But after taking nitroglycerin, the chest pain increased in intensity. Which one of the following is most likely ?
(a) Hypertrophic obstructive cardiomyopathy
(b) Chronic type A dissection of aorta
(c) Degenerative mitral regurgitation
(d) Sub-acute bacterial endocarditis involving aortic valve

**11.** A patient with atrial fibrillation on regular treatment presents with photosensitivity, skin discoloration and peripheral neuropathy. Which drug may be implicated ?
(a) Digoxin
(b) Disopyramide
(c) Amiodarone
(d) Bisoprolol

**12.** Which of the following are categorised under obstructive lung disease ?
1. Bronchial asthma
2. Bronchiectasis
3. Bronchiolitis
4. Pulmonary sarcoidosis
Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**13.** Risk factors for development of COPD include which of the following ?
1. Tobacco smoking
2. Recurrent infection
3. Coal dust exposure
4. High socio-economic status
Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**14.** Which one of the following is not an aim of asthma therapy ?
(a) Peak expiratory flow circadian variation < 20%
(b) No emergency visits
(c) Minimal use of inhaled corticosteroid
(d) Minimal use of beta-2-agonists

**15.** A 65-year-old male smoker has been diagnosed with Chronic Obstructive Pulmonary Disease (COPD). On pulmonary function testing, the $FEV_1/FVC < 0.7$ and $FEV_1 = 42\%$ of predicted. The severity of airflow obstruction in this patient as per GOLD criteria is :
(a) Mild
(b) Moderate
(c) Severe
(d) Very severe

**16.** A 40-year-old patient of bronchial asthma presents with acute severe breathlessness. Indications for giving him assisted ventilation for acute severe asthma include which of the following ?
(a) $PaO_2 < 80$ mm of Hg, $PaCO_2 < 45$ mm of Hg
(b) $PaO_2 > 60$ mm of Hg, $PaCO_2 > 45$ mm of Hg
(c) $PaO_2 < 60$ mm of Hg, $PaCO_2 > 45$ mm of Hg
(d) $PaO_2 < 80$ mm of Hg, $PaCO_2 > 45$ mm of Hg

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# QUESTION PAPER 2021

1. A 60-year-old man comes to emergency with history of chest pain, which is acute onset. The ECG shows ST depression and T waves inversion. Cardiac biomarkers in blood are not elevated. What will be the appropriate management ?
   (a) Oxygen + Aspirin + Ticagrelor + Metoprolol
   (b) Oxygen + Sublingual nitroglycerin + Antiplatelets + Streptokinase
   (c) Antiplatelets + LMW Heparin subcutaneous
   (d) Oxygen + Sublingual nitroglycerin + Digoxin

2. A victim is found unconscious at the roadside. As a trained rescuer, after checking the victim's response and pulse, you decide on resuscitation. What is the recommended ratio of chest compression to ventilation during CPR ?
   (a) 90 : 4
   (b) 60 : 2
   (c) 30 : 2
   (d) 60 : 1

3. Which one of the following is not a differential diagnosis of ST segment elevation in ECG ?
   (a) Acute pericarditis
   (b) Trauma to ventricles
   (c) Hypothermia
   (d) Hypocalcemia

4. Which one of the following is a non-shockable rhythm in respect to use of AED (Automatic External Defibrillator) ?
   (a) Monomorphic ventricular tachycardia
   (b) Polymorphic ventricular tachycardia
   (c) Ventricular fibrillation
   (d) Pulseless electrical activity

5. A 50-year-old man reports to Emergency with breathlessness, palpitations and acute chest pain. On auscultation, there is systolic murmur at apex and ECG shows ST elevations in anterior chest leads. Which one of the following would be the next choice of investigation ?
   (a) Cardiac marker troponin T/I
   (b) Echocardiography
   (c) TMT
   (d) 24-hour holter monitoring

6. Which of the following electro-cardiographic findings are manifestations of digitalis intoxication ?
   1. Ventricular bigeminy
   2. Ventricular tachycardia
   3. Atrial flutter
   4. Atrial tachycardia with variable block

   Select the correct answer using the code given below:
   (a) 1, 2 and 3
   (b) 1, 2 and 4
   (c) 1, 3 and 4
   (d) 2, 3 and 4

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7. According to modified WHO classification of Heart Disease in Pregnancy, which cardiac lesion is a contraindication for pregnancy ?
   (a) Hypertrophic cardiomyopathy
   (b) Uncomplicated, small or mild pulmonary stenosis
   (c) Successfully repaired Tetralogy of Fallot
   (d) Pulmonary arterial hypertension

8. A 35-year-old patient presents in the Emergency with sudden onset palpitations. His heart rate is 150/minute and gets reverted after carotid massage. The most probable diagnosis is :
   (a) Paroxysmal supraventricular tachycardia
   (b) Ventricular tachycardia
   (c) Ventricular fibrillation
   (d) Atrial flutter with block

2. Type-2 HRS is characterized by a moderate and stable or slowly progressive renal dysfunction.
3. HRS is seen in patients with large ascites in case of cirrhosis.

Which of the above statements is/are correct?
(a) 1 only
(b) 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

**25.** Which one of the following is the serological marker of immunization with Hepatitis B vaccine?
(a) HBsAg
(b) Anti-HBs
(c) HBcAg
(d) Anti-HBc

**26.** Infection with which of the following organisms can cause a syndrome which is clinically indistinguishable from achalasia of the oesophagus?
(a) Trypanosoma cruzi
(b) Schistosoma haematobium
(c) Mycobacterium leprae
(d) Plasmodium falciparum

**27.** Consider the following statements in respect of Helicobacter Pylori:
1. It is a gram positive, spiral-shaped bacterium.
2. It uses an adhesion molecule (BabA) to bind to the 'Lewis b' antigen on gastric epithelial cells.
3. It produces 'urease' enzyme that helps to raise the pH around the bacterium.
4. It exclusively colonises only 'gastric-type' epithelium.

Which of the above statements are correct?
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 2, 3 and 4
(d) 1, 3 and 4

**28.** The quadruple therapy regime (or OBMT regime) for Helicobacter Pylori eradication comprises which of the following drugs?
(a) Omeprazole, Bismuth subcitrate, Metronidazole, Tetracycline
(b) Ofloxacin, Bismuth subcitrate, Metronidazole, Tetracycline
(c) Omeprazole, Beclomethasone, Metronidazole, Tacrolimus
(d) Omeprazole, Beclomethasone, Mometasone, Tetracycline

**29.** Cystic fibrosis disorder is:
(a) Autosomal dominant
(b) Autosomal recessive
(c) X-linked dominant
(d) X-linked recessive

**30.** Which of the following diseases may be associated with Coeliac disease?
1. Type-2 Diabetes mellitus
2. IgA deficiency
3. Down syndrome
4. Turner's syndrome

Select the correct answer using the code given below
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**31.** Consider the following statements regarding Coeliac disease :
1. There is a strong association of the disease with Human Leukocyte Antigen, HLA-DQ2/DQ8.
2. There is intolerance to gluten found in wheat, rye, barley and oats.
3. In the elderly, the disease presents with symptoms ranging from florid malabsorption, weight loss and anemia to oral ulceration, dyspepsia and bloating.
4. In suspected patients, small bowel biopsy is contraindicated.

Which of the above statements are correct ?
(a) 1, 2 and 3
(b) 2 and 3 only
(c) 1 and 2 only

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valproic acid, lamotrigine, and carbamazepine are correct for bipolar.

**94.** (c) Pellagra, Niacin therapy

Pellagra is classically due to niacin (vitamin B3) deficiency, with the triad of dermatitis (often photosensitive), diarrhea, and dementia (or delirium). Diets relying predominantly on corn/maize without proper nixtamalization can lead to inadequate niacin and tryptophan intake. Chronic alcoholism further exacerbates nutritional deficiencies. Management involves niacin supplementation and addressing the underlying nutritional deficits.

**95.** (a) Anaphylaxis to allergens that are difficult to avoid

Patients at high risk of severe or life-threatening allergic reactions (e.g. peanut allergy, insect stings) are often prescribed a self-injectable epinephrine device (e.g., EpiPen). This allows immediate administration at the first sign of anaphylaxis, which can be life-saving. Cardiogenic shock and complete heart block require different interventions. Pheochromocytoma treatment focuses on alpha-adrenergic blockade prior to surgery; self-injectable epinephrine is not indicated.

**96.** (b) 1, 2 and 4

An AV fistula (often in the forearm) must mature over weeks to months, so creating it well before dialysis is essential (some guidelines suggest at least 6–12 weeks, but planning up to a year early is not unreasonable). The walls of the chosen vessels do thicken and enlarge with arterial pressure (1). If a native fistula is not feasible, a synthetic graft can be placed (4). Leg veins are not the usual first choice (3 is incorrect) unless upper limbs are unsuitable.

**97.** (d) Orogastric feeding

A 30-week preterm infant weighing only 1.2 kg typically lacks the coordination and strength for direct breastfeeding or spoon-feeding. The recommended method is orogastric (or sometimes nasogastric) tube feeding, ensuring adequate nutrition while minimizing the risk of aspiration. Intravenous fluids alone do not supply adequate enteral nutrition, and direct breastfeeding/spoon-feeding is generally not feasible for very preterm or very low-birth-weight infants initially.

**98.** (a) Oragastric or nasogastric tube feeding

This preterm baby shows signs of feeding incoordination (spillage, coughing), raising concern for aspiration if oral feeds continue. The usual step is to switch to safer tube feeding (orogastric or nasogastric) until the infant's suck-swallow-breathe coordination matures. IV fluids alone do not suffice for nutritional needs, and a gastrostomy is more invasive. Breastfeeding is not appropriate until the baby can handle oral feeds safely.

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**99.** (c) 8 months

Around 6 months, infants typically start sitting without support (though it can be 6–7 months). By about 8–9 months, babies often produce babbling with repeated syllables like "ma-ma," "ba-ba." They also become more adept at localizing sounds in multiple directions. Four months is too early for stable sitting; 10 months is usually beyond the first distinct babbling stage. Hence 8 months is the best fit for these developmental milestones.

**100.** (b) 8

Using a pediatric adaptation of the Glasgow Coma Scale (or the standard adult scoring if approximated):

1. Eye opening to pain → 2 points
2. Verbal: moans/sounds to pain → 2 points
3. Motor: withdrawal to pain → 4 points

Summing these yields a total GCS of 8. This indicates significant impairment and the need for close neurological monitoring and possible airway protection.

**101.** (b) 1, 2 and 4

Pulseless electrical activity (PEA) is often approached via "H's and T's." Key reversible causes include:

1. Tension pneumothorax
2. Tamponade (1)
3. Thrombosis (pulmonary or coronary) (2)
4. Hypovolemia

**42.** Which of the following are the causes of polyneuropathy?
1. HIV
2. Alcohol
3. Phenytoin
4. Rifampicin

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**43.** Consider the following statements regarding Intracerebral Hemorrhage (ICH):
1. It accounts for 35% of all strokes.
2. Most common site of hypertensive ICH is cerebral cortex.
3. Use of cocaine and methamphetamine is a frequent cause of stroke in young age.
4. Hypertensive ICH usually results from spontaneous rupture of small penetrating artery deep in brain.

Which of the above statements are correct?
(a) 1 and 2
(b) 2 and 3
(c) 3 and 4
(d) 1 and 4

**44.** A 21-year-old young lady presents with unilateral facial weakness. She is unable to close her eye on the affected side and there are vesicles in her ear. She is suffering from:
(a) 8th Cranial Nerve Palsy
(b) 3rd Cranial Nerve Palsy
(c) 5th Cranial Nerve Palsy
(d) 7th Cranial Nerve Palsy

**45.** Lesion of dominant parietal lobe causes which of the following?
1. Dysphasia
2. Acalculia
3. Dyslexia
4. Contralateral neglect

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**46.** Which of the following are the clinical features of Neurofibromatosis-1?
1. Angiomas
2. Axillary freckles
3. Cutaneous schwannomas
4. Neurofibromas

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**47.** Which of the following are clinical features of Parkinson's disease?
1. Bradykinesia
2. Rigidity
3. Spastic gait
4. Mask-like face

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**48.** Which one of the following statements is correct for an individual with blood group AB?
(a) A antigen on RBC; Anti-B antibody in plasma.
(b) A and B antigens on RBC; no antibody in plasma.
(c) B antigen on RBC; Anti-A antibody in plasma.
(d) No antigen on RBC; Anti-A and Anti-B antibodies in plasma.

**49.** Which one of the following is unlikely to be associated with eosinophilia?
(a) Loeffler's syndrome
(b) Toxocariasis
(c) Trichinella spiralis
(d) Tuberculosis

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# PAPER 2021 ANSWERS

1. (a) Oxygen + Aspirin + Ticagrelor + Metoprolol

In the setting of acute coronary syndrome manifesting with ST depression and T-wave inversion but without elevated cardiac enzymes, unstable angina (or non-ST elevation acute coronary syndrome) is likely. Immediate management includes providing oxygen if hypoxic, antiplatelet therapy (aspirin plus a P2Y12 inhibitor such as ticagrelor), and a beta-blocker like metoprolol to reduce myocardial oxygen demand. Although nitrates are also important to relieve ischemic pain, the combination of aspirin and ticagrelor along with a beta-blocker is crucial for stabilizing the clinical picture.

2. (c) 30 : 2

Current adult CPR guidelines recommend a compression-to-ventilation ratio of 30:2 for both single and two-rescuer CPR (unless an advanced airway is in place). Rescuers deliver 30 compressions at a rate of 100–120 per minute, followed by 2 breaths. This approach ensures adequate perfusion pressure and oxygenation. The 30:2 ratio simplifies training and is designed to minimize interruptions in chest compressions, thereby maximizing blood flow to vital organs.

3. (d) Hypocalcemia

ST segment elevation can appear in acute pericarditis, ventricular trauma (such as contusions), and hypothermia (notably causing Osborne or J waves). Hypocalcemia typically leads to a prolonged QT interval, not ST segment elevation. Because it does not characteristically present with raised ST segments, hypocalcemia is not listed among common causes of ST elevation and thus is the correct choice for "not a differential diagnosis of ST segment elevation."

4. (d) Pulseless electrical activity

Non-shockable rhythms include pulseless electrical activity (PEA) and asystole. In PEA, the ECG may show organized complexes, but there is no effective cardiac contraction or palpable pulse. Defibrillation targets disorganized or malignant rhythms such as ventricular fibrillation or pulseless ventricular tachycardia; hence PEA is not treated by shocks. Instead, management emphasizes high-quality CPR, administering medications (e.g., epinephrine), and seeking reversible causes (like hypoxia or hypovolemia).

5. (b) Echocardiography

In acute ST-segment elevation with a new systolic murmur at the apex, a mechanical complication such as papillary muscle dysfunction or rupture leading to acute mitral regurgitation is possible. Although checking cardiac markers (troponins) is essential, echocardiography is the immediate investigation of choice to identify or confirm any structural abnormality (e.g., valvular regurgitation, wall motion defects). Early echocardiographic evaluation is critical for guiding urgent interventions in a potentially unstable condition.

6. (b) 1, 2 and 4

Digitalis toxicity can produce multiple arrhythmias, including ventricular ectopics (commonly presenting as bigeminy), ventricular tachycardia, and the characteristic atrial tachycardia with AV block. While atrial flutter can be seen in many arrhythmias, it is not among the most classic ECG findings directly attributed to digitalis toxicity. Ventricular bigeminy, ventricular tachycardia, and "PAT with block" (atrial tachycardia with variable block) are well-documented manifestations of digitalis overdose.

7. (d) Pulmonary arterial hypertension

Pulmonary arterial hypertension (PAH) carries a very high maternal mortality risk, placing it in WHO Class IV (the highest-risk group) for pregnancy. In such cases, pregnancy is contraindicated because the hemodynamic changes can be life-threatening. Mild pulmonary

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**59.** Which one of the following conditions may result in hypoglycaemia?
(a) Critical illness
(b) Cortisol therapy
(c) Cushing's disease
(d) Metabolic syndrome

**60.** Use of which of the following drugs may result in osteoporosis?
1. Phenytoin
2. Lithium
3. Methotrexate
4. Azathioprine

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**61.** Which one of the following oral anti-diabetic drugs acts on renal proximal tubules?
(a) Alpha glucosidase inhibitors
(b) GLP-1 analogue
(c) DPP-4 inhibitors
(d) SGLT-2 inhibitors

**62.** Which of the following are short acting insulin?
1. Aspart
2. Lispro
3. Glargine
4. Regular

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**63.** Hirsutism is seen in which of the following?
1. Polycystic ovarian syndrome
2. Congenital adrenal hyperplasia
3. Hypothyroidism
4. Ovarian tumour

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2 and 4 only

**64.** Which of the following are correct regarding hypothyroidism?
1. It is more common in females.
2. Autoimmunity is a rare aetiopathogenesis.
3. In pregnancy, increased dose of levothyroxine is required.
4. Suppressed TSH is a risk factor for osteoporosis.

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1 and 4 only
(c) 1, 3 and 4
(d) 2, 3 and 4

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**65.** Which of the following are correct regarding Diabetes insipidus?
1. Polyuria and polydipsia are common symptoms.
2. Urine is of low osmolality and specific gravity.
3. Lithium is useful in treatment.
4. It is potentially lethal, if hypothalamic thirst centre is damaged.

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1 and 4 only
(d) 2, 3 and 4

**66.** A 42-year-old lady presents with symptoms of tiredness, constipation, impaired hearing and weight gain in spite of poor appetite. Which of the following are relevant investigations in this case?
1. TSH level
2. Free $T_4$ levels (unbound $T_4$)
3. Anti-TPO antibodies
4. Radionuclide scan of the thyroid

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4

(d) 2, 3 only

**67.** A patient presents with circulatory shock, nausea, vomiting and diarrhoea. A diagnosis of acute adrenal crisis is considered. A blood sample is stored for measurement of serum cortisol and treatment started without delay. Which of the following are appropriate interventions?
1. IV normal saline
2. IV hydrocortisone 100 mg stat
3. IV 10% glucose
4. IV KCl as infusion

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1 and 2 only
(c) 1, 3 and 4
(d) 2, 3 and 4

**68.** The most common acid-base disturbance in critically ill patients is:
(a) Chronic respiratory acidosis
(b) Chronic respiratory alkalosis
(c) Chronic metabolic acidosis
(d) Chronic metabolic alkalosis

**69.** Which of the following are the potentially reversible causes of weight gain?
1. Insulinoma
2. Cushing's syndrome
3. Sulfonylureas
4. Beta-blockers

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 3 and 4 only
(c) 2 and 3 only
(d) 1, 2, 3 and 4

**70.** Which of the following are the metabolic complications of parenteral nutrition?
1. Hyperglycemia
2. Liver cirrhosis
3. Fluid overload
4. Hyperphosphatemia

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 3 and 4 only
(d) 1 and 3 only

**71.** Pseudomembranous colitis is associated with which one of the following microbes?
(a) Entamoeba histolytica
(b) Salmonella typhi
(c) Escherichia coli
(d) Clostridium difficile

**72.** The characteristic rash seen on the face in a case of Parvovirus B19 infection is called:
(a) Slapped cheek rash
(b) Butterfly rash
(c) Melasma like rash
(d) Christmas tree rash

**73.** Bartonella infection is an important cause of blood culture negative endocarditis. Clinical diseases caused by Bartonella species in humans include which of the following?
1. Cat scratch disease
2. Trench fever
3. Carrion's disease
4. Anisakiasis

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**74.** The causative organism and the vector for scrub typhus are:
(a) Orientia tsutsugamushi and Louse
(b) Rickettsia rickettsii and Trombiculid mite
(c) Orientia tsutsugamushi and Trombiculid mite
(d) Rickettsia prowazekii and Ixodes tick

**75.** Which of the following are correct regarding tetanus?
1. Risus sardonicus may be seen.
2. Endotoxin produced has affinity for sensory nerve endings.
3. Lockjaw is painless.

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4. Hysteria can mimic tetanus.

Select the correct answer using the code given below:

(a) 1, 2 and 3 only
(b) 2 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

**76.** A 25-year-old traveller from United Kingdom desires anti-malaria prophylaxis before travelling to India. He has history of seizures and depression. Which of the following drugs can be used?

1. Doxycycline
2. Atovaquone + Proguanil
3. Chloroquine + Proguanil
4. Mefloquine

Select the correct answer using the code given below:

(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1 and 3 only
(d) 3 and 4 only

**77.** Pulmonary stage is seen in which of the following infections?

1. Ascaris lumbricoides
2. Strongyloides stercoralis
3. Onchocerca volvulus

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**78.** Consider the following statements with regard to Amphotericin B:

1. It is a narrow spectrum antifungal agent.
2. It can cause nephrotoxicity.
3. It lacks an oral preparation.
4. Its lipid formulations are less toxic.

Select the correct answer using the code given below:

(a) 2 and 3 only
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 2 and 4 only

**79.** Which one of the following moulds causes mucormycosis, commonly known as 'black fungus'?

(a) Rhizopus
(b) Aspergillus
(c) Candida
(d) Histoplasma

**80.** Which of the following infections are caused by mosquito bite?

1. Malaria
2. Typhus
3. Filariasis
4. Dengue fever

Select the correct answer using the code given below:

(a) 1, 2 and 3
(b) 1 and 4 only
(c) 1, 3 and 4
(d) 2, 3 and 4

**81.** Which one of the following is a hallmark of marasmus?

(a) Normal body mass index
(b) Serum albumin < 2·8 g/dL
(c) Anergy
(d) Triceps skin fold < 3 mm

**82.** Anti-Ribonucleoprotein antibody (Anti-RNP) is characteristically seen in which one of the following conditions?

(a) Sjogren's syndrome
(b) Diffuse systemic sclerosis
(c) Sarcoidosis
(d) Mixed connective tissue disorder

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**83.** Polyarteritis nodosa has peak incidence between the ages of:

(a) 10 – 20 years
(b) 20 – 30 years
(c) 30 – 40 years
(d) 40 – 50 years

**84.** First line drug treatment to reduce fractures in osteoporosis is:

(a) Bisphosphonates

(b) Denosumab
(c) Teriparatide
(d) Raloxifene

**85.** Which of the following are tricyclic antidepressants?
1. Amitriptyline
2. Dosulepin
3. Paroxetine
4. Imipramine

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**86.** Recurrent bouts of binge eating are usually associated with:
(a) Bulimia nervosa
(b) Anorexia nervosa
(c) Post-partum depression
(d) Personality disorder

**87.** During physical assessment of a 55-year-old male with low back pain, the quadriceps (knee) reflex was absent. Which of the following nerve roots is most likely to be affected?
(a) $L_2$
(b) $L_5$
(c) $L_4$
(d) $S_1$

**88.** Which of the following conditions are parts of inherited cancer syndrome?
1. Retinoblastoma
2. Li-Fraumeni syndrome
3. Xeroderma pigmentosum
4. Peutz-Jeghers syndrome

Select the correct answer using the code given below:
(a) 1, 2, 3 and 4
(b) 1, 2 and 3 only
(c) 1 and 3 only
(d) 2 and 4 only

**89.** Which of the following are the diseases associated with DNA repeat sequences?
1. Huntington's disease
2. Myotonic dystrophy
3. Friedreich's ataxia
4. Klinefelter syndrome

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**90.** Cardiac outflow tract defect, thymic hypoplasia, cleft palate and hypocalcemia are clinical features of which gene disorder?
(a) Angelman syndrome
(b) Williams syndrome
(c) Smith-Magenis syndrome
(d) DiGeorge syndrome

**91.** Early hypotension in venomous snakebite is due to which of the following?
(a) Pooling of blood in the pulmonary and splanchnic circulation
(b) Systemic bleeding
(c) Hemolysis
(d) Loss of intravascular volume into the soft tissues

**92.** Gastric aspiration and lavage is contraindicated in which of the following poisonings?
1. Strong acids
2. Alkalis
3. Petroleum distillates
4. Ethanol

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 2, 3 and 4

**93.** Acetylcysteine is an antidote for which poisoning?
(a) Salicylates
(b) Paracetamol
(c) Tricyclic antidepressants

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(d) Benzodiazepines

**94.** Which one of the following is not a constituent of treatment of severe hyperkalemia?
(a) IV calcium gluconate (10 mL of 10%)
(b) Beta-2 adrenoceptor antagonist
(c) Dialysis
(d) IV sodium bicarbonate

**95.** Kyasanur Forest Disease is endemic to:
(a) West Africa
(b) South America
(c) South-West India
(d) Balkans

**96.** Which one of the following is not a usual cause of Type-2 respiratory failure?
(a) Guillain-Barré syndrome
(b) Upper airway obstruction
(c) Pulmonary embolism
(d) Flail chest

**97.** A 10-year-old girl is diagnosed with dengue fever. She has abdominal pain and persistent vomiting. Examination reveals normal blood pressure but the hematocrit is found to be increased. Which of the following is the most appropriate initial fluid management?
(a) Ringer lactate @ 3 mL/kg/hour
(b) Ringer lactate @ 5 mL/kg/hour
(c) Ringer lactate @ 7 mL/kg/hour
(d) Ringer lactate @ 10 mL/kg/hour

**98.** A child presents with headache and vomiting in the emergency room following a fall from the bed. Which one of the following treatment modalities is not recommended in the emergency room?
(a) Intravenous mannitol administration
(b) Administration of hypertonic (3%) solution
(c) Elevate the head end by 30 degrees
(d) Therapeutic lumbar puncture

**99.** The recommended ratio for chest compression to breaths administered by a single rescuer during resuscitation of a child in cardiac arrest is:
(a) 15 : 2
(b) 30 : 2
(c) 14 : 1
(d) 7 : 1

**100.** A 4-year-old comatose child is assessed by the Modified Glasgow Coma Scale. Which of the following is the correct interpretation of the score given as E2V3M2 for the best eye opening response, best verbal response and best motor response respectively?
(a) Eye opening to speech, makes incomprehensible sounds and abnormal flexion
(b) Eye opening to speech, inappropriate words and abnormal flexion
(c) Eye opening to pain, moans to pain and abnormal flexion
(d) Eye opening to pain, cries to pain and extension to pain

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**101.** What will a baby with mild hypothermia feel like, when touched by the back of the hand of an examiner?
(a) The entire body will feel cold.
(b) The abdomen and feet will be warm, but hands will be cold.
(c) The abdomen will be warm, but the hands and feet will be cold.
(d) The abdomen, feet and hands will all feel cold.

**102.** Which of the following manifestations is/are seen in hypocalcemia?
(a) Nausea and vomiting
(b) Dilated cardiomyopathy
(c) Polyuria
(d) Polydipsia

**103.** A 6-week-old infant presents with unconjugated hyperbilirubinemia. Which of the following could be a likely diagnosis?
(a) Dubin Johnson syndrome
(b) Galactosemia

**50.** Which one of the following is a tumour marker for carcinoma of pancreas?
(a) Alpha-fetoprotein
(b) CA-125
(c) Calcitonin
(d) CA-19-9

**51.** Which of the following statements regarding G6PD enzyme deficiency are correct?
1. It is an X-linked deficiency.
2. Geographical distribution parallels the malaria belt.
3. Consumption of fava beans is protective.
4. Transfusion support may be life saving.

Select the correct answer using the code given below:
(a) 1 and 3 only
(b) 1, 2 and 4
(c) 1 and 4 only
(d) 2, 3 and 4

**52.** Which of the following investigations indicate active hemolysis?
1. Increased reticulocyte count
2. Increased conjugated bilirubin
3. Increased urinary urobilinogen
4. Decreased haptoglobin

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1 and 4 only
(c) 1, 3 and 4
(d) 2, 3 and 4

**53.** Which type of anemia can be caused by the drug Dapsone?
(a) Iron deficiency anemia
(b) Sideroblastic anemia
(c) Spur cell anemia
(d) Hemolytic anemia

**54.** Which of the following are decreased during pregnancy?
1. Iron stores
2. Vitamin B12 levels
3. Folate levels
4. Coagulation factors

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1 and 2 only
(c) 1, 3 and 4
(d) 2, 3 and 4

**55.** Which one of the following drugs causes direct X-a inhibition?
(a) Tirofiban
(b) Apixaban
(c) Dabigatran
(d) Prasugrel

**56.** A 20-year-old young girl presents with heavy menstrual bleeding, petechiae on her arms and blood blisters in mouth. Her complete blood count shows haemoglobin 7 gm/dL, total leucocyte count 8,700 cells/μL and platelet count of 6,000/μL with peripheral smear showing large platelets. Which is likely the best initial drug treatment for this patient?
(a) High dose glucocorticoids
(b) High dose glucocorticoids with IVIgG
(c) High dose glucocorticoids with Rituximab
(d) IVIgG with anti-Rho(D) therapy

**57.** A 30-year-old female presents with malaise, breathlessness off and on and paresthesias. She is vegetarian by diet. Her investigation revealed Hb = 6.2 gm/dL, MCV = 128 fL, platelet count = 1,20,000/cumm, with blood smear showing macrocytosis and neutrophil hypersegmentation. What is the likely diagnosis?
(a) Iron deficiency anemia
(b) Myelophthisic anemia
(c) Megaloblastic anemia
(d) Aplastic anemia

**58.** Which of the following is the most common dermatologic manifestation of Diabetes mellitus?
(a) Xerosis
(b) Acanthosis nigricans
(c) Lichen planus
(d) Necrobiosis lipoidica

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**114.** Atomoxetine is prescribed to children with Autism Spectrum Disorder to control symptoms of:
(a) Anxiety
(b) Sleep disturbances
(c) Hyperactivity
(d) Repetitive behaviour

**115.** Fractional inactivated intradermal poliovirus vaccine is given at what ages in the National Immunization Schedule?
(a) 6 weeks and 10 weeks
(b) 6 weeks and 14 weeks
(c) 10 weeks and 14 weeks
(d) 6 weeks, 10 weeks and 14 weeks

**116.** Protective efficacy of Varicella vaccine when used for post-exposure prophylaxis (given within 72 hours of contact) is approximately:
(a) 60%
(b) 70%
(c) 80%
(d) 90%

**117.** A 10-year-old child presents with difficulty in word recognition, word decoding abilities, difficulty in spelling with normal listening comprehension. The most likely diagnosis is :
(a) Dyslexia
(b) Autism spectrum disorder
(c) Rett syndrome
(d) Attention deficit hyperactivity disorder

**118.** Which of the following is the best strategy to use in the management of temper tantrums in a 3-year-old boy?
(a) Giving in to the demands
(b) Physical punishment
(c) Scolding
(d) 'Time out'

**119.** Which one of the following is the correct schedule for home visits by an Accredited Social Health Activist for facility-born newborn babies?
(a) On 1, 3, 7, 14, 21 and 28 days of life
(b) On 3, 7, 10, 14, 21 and 28 days of life
(c) On 3, 7, 14, 21, 28 and 42 days of life
(d) On 7, 14, 21, 28, 35 and 42 days of life

**120.** Which one of the following diseases is covered under Rashtriya Bal Swasthya Karyakram (RBSK)?
(a) Rheumatic heart disease
(b) Community acquired pneumonia
(c) Systemic onset juvenile idiopathic arthritis
(d) Nephrotic syndrome

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(c) Rotor syndrome
(d) Congenital hypothyroidism

**104.** A mother with polyhydramnios gives birth to a term newborn infant who develops choking and cyanosis on feeding soon after birth. There is excessive drooling and frothing from the mouth. Most likely diagnosis is:
(a) Anorectal malformation
(b) Diaphragmatic hernia
(c) Arnold Chiari malformation
(d) Tracheoesophageal fistula

**105.** An infant has just started to watch his mother intently when she talks to him. He has not yet started smiling back. What is the approximate age of the child?
(a) 4 weeks
(b) 6 weeks
(c) 8 weeks
(d) 12 weeks

**106.** A child demonstrates a mature pincer grasp and is able to build a tower of maximum 6 blocks and can make vertical and circular strokes with pencil. His developmental age is around:
(a) 12 months
(b) 18 months
(c) 24 months
(d) 36 months

**107.** A typically developing girl is able to creep upstairs, and builds a tower of 2 blocks. Which of the following skills should she also display?
(a) Scribbling
(b) Running
(c) Speaking at least 10 words
(d) Exploring drawers

**108.** A child can ride a tricycle, hop on one foot but cannot skip. He uses alternate feet while going downstairs. Which one of the following motor skills should he be able to perform at this developmental level?
(a) Copy a triangle
(b) Copy a cross
(c) Build a gate with blocks
(d) Copy a rectangle

**109.** Which one of the following skills is a normally developing 2-year-old child unable to perform?
(a) Unscrewing a lid
(b) Turning a door knob
(c) Building a vertical tower of 6 blocks
(d) Copying a circle

**110.** Which one of the following statements is age-appropriate for a normally developing 4-month-old infant?
(a) The infant can bring his hands to the midline.
(b) The infant has still not attained partial head control.
(c) The infant has started to reach out with one hand.
(d) The infant has started making monosyllabic sounds like 'da' or 'pa'.

**111.** Which one of the following is used to estimate the surface area of burn injuries in children less than 15 years of age?
(a) Berkow body surface area chart
(b) Rule of Nines
(c) Lund and Browder chart
(d) Parkland formula

**112.** A 4-year-old boy presents with ingestion of many tablets of salicylate. Which one of the following complications is he likely to develop?
(a) Hyperkalemia
(b) Rhabdomyolysis
(c) Prolonged QRS complex in ECG
(d) Metabolic acidosis

**113.** A 3-year-old boy presents with parental concerns regarding delayed development, especially speech. On observation, the clinician notes decreased eye contact, inattentiveness, unresponsive to being called, and toe walking. What is the most likely diagnosis?
(a) Attention Deficit Hyperactivity Disorder
(b) Autism Spectrum Disorder
(c) Cerebral Palsy
(d) Social Communication Disorder

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stenosis, repaired Tetralogy of Fallot, and stable hypertrophic cardiomyopathy (without severe obstruction) are comparatively less hazardous and are not absolute contraindications. PAH's severe strain on the right ventricle under the stress of increased blood volume makes it especially dangerous.

**8.** (a) Paroxysmal supraventricular tachycardia

Carotid sinus massage increases baroreceptor stimulation, raises vagal tone, and can terminate tachyarrhythmias involving the AV node, such as AV nodal re-entrant tachycardia (the most common type of PSVT). Rapid restoration of normal sinus rhythm after carotid massage strongly points to PSVT, especially at a rate of about 150 beats per minute. Ventricular tachycardia, atrial flutter, and ventricular fibrillation do not typically revert so promptly with vagal maneuvers, making PSVT the most likely diagnosis.

**9.** (a) It is a high pitched diastolic sound.

An opening snap is characteristically heard in mitral stenosis. It is a high-pitched, early diastolic sound that occurs just after the second heart sound (S2), reflecting the abrupt halt of stenotic mitral valve leaflets. It does not precede S2, nor is it caused by aortic valve pathology. While pulmonary hypertension can affect timing between S2 and the opening snap, the hallmark of an opening snap itself is tied to the mitral valve in diastole.

**10.** (a) Hypertrophic obstructive cardiomyopathy

In hypertrophic obstructive cardiomyopathy (HOCM), sublingual nitroglycerin reduces venous return and decreases left ventricular volume, worsening the outflow tract obstruction and intensifying chest pain. A family history of sudden cardiac death in a relatively young individual supports HOCM as well. By contrast, in typical ischemic angina, chest pain improves with nitrates. The genetic predisposition and adverse response to nitroglycerin are classic hallmarks pointing to HOCM rather than aortic dissection or valvular lesions.

**11.** (c) Amiodarone

Amiodarone is well known for its wide range of adverse effects. It frequently causes skin manifestations such as photosensitivity and blue-gray discoloration in sun-exposed areas. Neurological side effects include peripheral neuropathy, tremors, and ataxia. Thyroid dysfunction (both hypo- and hyperthyroidism) and corneal deposits are also recognized complications. Other listed drugs are not commonly associated with this distinct cluster of cutaneous and neurologic side effects, making amiodarone the clear suspect here.

**12.** (a) 1, 2 and 3

Obstructive lung diseases are conditions that involve airflow limitation due to obstruction in the airways. Bronchial asthma, bronchiectasis, and bronchiolitis all typically present with obstructive physiology and reduced airflow. Pulmonary sarcoidosis, however, is generally classified as a restrictive lung disease, featuring reduced lung volumes and decreased compliance rather than airway obstruction. Therefore, asthma, bronchiectasis, and bronchiolitis fit into the obstructive category, making options 1, 2, and 3 the correct grouping.

**13.** (a) 1, 2 and 3

COPD is commonly linked to tobacco smoking, occupational exposures (including coal dust), and a history of recurrent respiratory infections that may damage the airways over time. Low socio-economic status is also recognized to contribute, likely through higher exposure to pollutants and limited healthcare access. "High socio-economic status" is not a typical risk factor. Hence tobacco smoking, recurrent infections, and coal dust exposure together (1, 2, and 3) are correct for predisposing to COPD.

**14.** (c) Minimal use of inhaled corticosteroid

An essential goal in asthma management is achieving and maintaining control of symptoms, which often requires consistent use of inhaled corticosteroids (ICS). Although one aims to step down ICS to the lowest effective dose once control is achieved, it is not an explicit goal to minimize ICS to near-zero usage because ICS therapy is the backbone of preventing airway

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inflammation and exacerbations. By contrast, limiting rescue beta-2-agonist use and avoiding emergency visits are explicit therapy targets.

**15.** (c) Severe

Under GOLD (Global Initiative for Chronic Obstructive Lung Disease) guidelines, a post-bronchodilator $FEV_1/FVC$ ratio less than 0.70 confirms persistent airflow limitation. COPD severity is then graded by percentage of predicted $FEV_1$: mild if $FEV_1 \geq 80\%$, moderate if 50–79%, severe if 30–49%, and very severe if <30%. In this case, the $FEV_1$ is 42% of predicted, which corresponds to severe COPD (Stage 3 by GOLD classification).

**16.** (c) $PaO_2 < 60$ mm of Hg, $PaCO_2 > 45$ mm of Hg

In acute severe asthma, an elevated $PaCO_2$ (above 45 mmHg) indicates hypoventilation or respiratory muscle fatigue, a dangerous sign. Simultaneously, a $PaO_2$ below 60 mmHg signals significant hypoxemia. Together, these findings suggest impending or actual respiratory failure requiring mechanical ventilation. Normally, during an exacerbation, patients hyperventilate and lower their $PaCO_2$. Once $CO_2$ begins to rise and oxygen drops severely, urgent intervention with assisted ventilation is warranted to prevent further deterioration.

**17.** (d) 2, 3 and 4

Certain lung cancers produce paraneoplastic phenomena without direct metastatic spread. These include nephrotic syndrome (particularly membranous nephropathy), Horner's syndrome (often from a Pancoast tumor invading sympathetic ganglia), and Lambert-Eaton myasthenic syndrome (commonly linked with small cell lung cancer). Carcinoid syndrome is usually associated with bronchial carcinoid or metastatic gastrointestinal carcinoids to the liver, not typical non-small cell or small cell lung cancers. Therefore, 2, 3, and 4 correctly identify extra-pulmonary manifestations.

**18.** (d) Overnight Polysomnogram

This clinical picture is classic for obstructive sleep apnea (OSA): obesity, daytime somnolence, morning headaches, and nocturnal symptoms such as heartburn (possible reflux exacerbated by apneic episodes). The gold standard test to diagnose OSA is an overnight polysomnogram (sleep study). It measures respiratory airflow, oxygen saturation, EEG, and other parameters to confirm apneas or hypopneas. Other listed investigations do not provide direct evidence of sleep-disordered breathing or quantify respiratory disturbances during sleep.

**19.** (d) 2, 3 and 4

Aspirin can exacerbate asthma in susceptible individuals (aspirin-exacerbated respiratory disease). ACE inhibitors can increase bradykinin and sometimes worsen airway hyper-reactivity. Beta blockers—especially non-selective types—block $\beta_2$-receptors in the bronchial smooth muscle, precipitating bronchospasm. Sulfonamides, while they can cause allergic reactions, are not classically associated with triggering or exacerbating asthma. Hence aspirin (2), ACE inhibitors (3), and beta blockers (4) are recognized offenders for asthma exacerbation.

**20.** (a) 1, 2 and 3

Ileal resection interrupts bile salt reabsorption, leading to fat malabsorption (steatorrhea) and diarrhea. The excess free fatty acids bind to calcium, permitting greater oxalate absorption from the gut, resulting in increased oxalate stone formation (oxalate-rich renal calculi). Hypernatremia is not a typical direct complication of ileal resection. Therefore, the recognized issues are nephrolithiasis with oxalate stones, diarrhea, and malabsorption of fats, captured by options 1, 2, and 3.

**21.** (b) 1, 2 and 4

Protein-losing enteropathy from lymphatic obstruction occurs in primary intestinal lymphangiectasia (dilated intestinal lymphatics) and in constrictive pericarditis (where elevated venous pressure impairs lymphatic drainage). Whipple's disease (infection with _Tropheryma whipplei_) can infiltrate and block lymphatic channels, resulting in malabsorption and protein loss. Eosinophilic gastroenteritis generally involves mucosal eosinophilic infiltration but

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does not characteristically produce obstruction of lymphatic vessels that leads to protein-losing enteropathy.

**22.** (b) Hepatitis E virus

Hepatitis E virus (HEV) infection in pregnancy is notoriously associated with a higher risk of fulminant hepatic failure and significant maternal mortality compared to other hepatitis viruses. While hepatitis A, B, and C can also affect pregnant women, HEV is the most frequently linked with acute liver failure and poor outcomes in that setting. Poor sanitation and contaminated water increase the risk of HEV, which can lead to an acute, severe course when acquired during pregnancy.

**23.** (c) 1, 2 and 3 only

Key contributors to the "anorexia of aging" include a diminished sense of taste and smell (leading to decreased food intake), reduced chewing ability (further limiting dietary intake), and slowed gastric emptying (causing earlier fullness). Together, these factors can produce weight loss and nutritional deficits in older adults. Although alterations in certain neuroendocrine signals can also contribute, many standard discussions emphasize the first three factors most directly with regard to early satiety. Hence statements 1, 2, and 3 best fit this definition.

**24.** (d) 1, 2 and 3

Hepatorenal syndrome (HRS) is a form of renal failure seen in advanced liver disease, especially cirrhosis with ascites. Type-1 HRS indeed features a rapid decline in renal function over about two weeks, while Type-2 HRS is more gradual and stable. Furthermore, it is classically observed in patients with significant ascites. All three statements accurately describe typical features of Type-1 and Type-2 HRS and its association with cirrhotic ascites.

**25.** (b) Anti-HBs

After receiving the Hepatitis B vaccine, the primary protective antibody is Anti-HBs (antibodies to the hepatitis B surface antigen). This indicates immunity either from successful vaccination or from recovery after natural infection. In contrast, HBsAg (hepatitis B surface antigen) signifies an ongoing infection, while Anti-HBc (antibodies to hepatitis B core antigen) typically indicates past or current infection. HBcAg is not measurable in peripheral blood in routine practice. Therefore, Anti-HBs is the key marker of successful immunization.

**26.** (a) Trypanosoma cruzi

Trypanosoma cruzi, which causes Chagas disease, may infect autonomic ganglia in the esophagus. This leads to a dilation and dysfunction of the organ (megaesophagus) that presents very similarly to idiopathic achalasia—namely, progressive dysphagia and esophageal motility problems. Other listed organisms do not typically produce an achalasia-like syndrome. Schistosoma haematobium affects the urinary tract; Mycobacterium leprae affects skin and nerves; Plasmodium falciparum causes malaria, not an esophageal motility disorder.

**27.** (c) 2, 3 and 4

Helicobacter pylori is a gram-negative (not gram-positive), spiral-shaped organism. It uses the BabA adhesion molecule to bind to Lewis b antigens on the gastric epithelial cells (statement 2). It also produces urease (statement 3) to create ammonia locally, buffering stomach acid and facilitating colonization. Critically, H. pylori typically adheres to areas of gastric-type epithelium, such as the stomach or patches of gastric metaplasia (statement 4). Hence 2, 3, and 4 are correct, while 1 is incorrect.

**28.** (a) Omeprazole, Bismuth subcitrate, Metronidazole, Tetracycline

Standard quadruple therapy (OBMT) for refractory H. pylori infection includes a proton pump inhibitor (e.g., omeprazole), bismuth subcitrate, metronidazole, and tetracycline. This combination enhances acid suppression (promoting bacterial clearance), provides direct antimicrobial effects (metronidazole, tetracycline), and includes bismuth, which both suppresses H. pylori and helps protect the gastric mucosa. The other listed regimens involving

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Although diabetic dermopathy ("shin spots") is classically described, among the listed options xerosis (dry skin) is very frequently encountered in diabetes. Chronic hyperglycemia and peripheral vascular compromise can reduce skin hydration, leading to dryness and itching. Acanthosis nigricans is a well-known sign of insulin resistance but is less common overall than simple dryness. Lichen planus and necrobiosis lipoidica diabeticorum occur less frequently. Hence xerosis is recognized as the most common dermatologic manifestation among these choices.

**59.** (a) Critical illness

In severe or prolonged critical illnesses (e.g., sepsis, liver failure), the body's glycogen stores can be depleted and gluconeogenesis may be impaired, leading to hypoglycemia. By contrast, both Cushing's disease and exogenous cortisol therapy favor hyperglycemia due to heightened gluconeogenesis and insulin resistance. Metabolic syndrome is likewise characterized by insulin resistance and tends to cause elevated blood glucose rather than low blood sugar. Thus among the options, critical illness is the clear cause of hypoglycemia.

**60.** (a) 1, 2 and 3

Chronic phenytoin can alter vitamin D metabolism and impair bone density. Lithium, via effects on the parathyroid axis (often contributing to hyperparathyroidism), also predisposes to reduced bone mass over time. Long-term methotrexate use may diminish bone turnover and contribute to bone loss. Azathioprine is not a well-established culprit for osteoporosis compared with the others. Hence (1) phenytoin, (2) lithium, and (3) methotrexate are recognized risk factors, while (4) azathioprine is less so.

**61.** (d) SGLT-2 inhibitors

Sodium-glucose co-transporter-2 (SGLT-2) inhibitors (e.g., canagliflozin, dapagliflozin) reduce glucose reabsorption at the proximal renal tubule, promoting glucosuria and thereby lowering blood glucose. Alpha-glucosidase inhibitors act in the gut, slowing carbohydrate digestion. GLP-1 analogues (like liraglutide) and DPP-4 inhibitors (like sitagliptin) primarily affect incretin pathways, not the kidney's glucose transport. Thus SGLT-2 inhibitors uniquely target glucose handling in the proximal tubule among these listed agents.

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**62.** (b) 1, 2 and 4

Insulin aspart and insulin lispro are classed as rapid-acting analogs, often grouped under "short acting" for practical purposes because their onset is quick and duration is relatively brief. Regular insulin is the classic "short-acting" human insulin. Glargine, on the other hand, is a long-acting basal insulin. Therefore, aspart (1), lispro (2), and regular insulin (4) are in the short/rapid category, while glargine (3) is not.

**63.** (b) 1, 2 and 4

PCOS (polycystic ovary syndrome) and congenital adrenal hyperplasia both increase androgen levels, causing hirsutism. Certain androgen-secreting ovarian tumors can also produce excessive androgens. By contrast, primary hypothyroidism usually does not produce true hirsutism (though it may cause coarse, brittle hair). Thus the prime culprits in the list for abnormal hair growth are PCOS, CAH, and ovarian tumors, matching statements 1, 2, and 4.

**64.** (c) 1, 3 and 4

Hypothyroidism indeed is more frequent in women (statement 1), and pregnancy usually requires a higher dose of levothyroxine (3). Meanwhile, "Autoimmunity is a rare aetiopathogenesis" (statement 2) is incorrect—Hashimoto's thyroiditis is the most common cause in iodine-sufficient areas. Although elevated TSH is the hallmark of untreated hypothyroidism, over-replacement or subclinical hyperthyroidism (i.e., suppressed TSH) increases fracture risk. Hence 1, 3, and 4 are accepted as correct in this context, while 2 is clearly false.

**65.** (b) 1, 2 and 4

the rising global burden of obesity and metabolic disease.

**36.** (c) T9 – T10

Beevor's sign is identified when the umbilicus moves upward upon attempting to raise the head or trunk from a supine position. This results from weakness in the lower part of the rectus abdominis, typically due to a lesion involving the T9 – T10 segments of the spinal cord. When these lower thoracic nerves are affected, the upper abdominal muscles pull the umbilicus upward, unopposed by the weaker lower fibers. Hence a mid-thoracic cord lesion is most commonly implicated.

**37.** (d) Plantar reflex shows flexor response

Lower motor neuron (LMN) lesions typically cause flaccid paralysis, diminished or absent deep tendon reflexes, muscle atrophy, and fasciculations (rather than their absence). Clonus and an extensor (Babinski) plantar response are features of upper motor neuron (UMN) lesions. By contrast, LMN lesions preserve the normal (flexor) plantar reflex. Hence of the choices given, the statement that the plantar reflex shows a flexor response is the correct hallmark of an LMN lesion.

**38.** (a) Increasing age

Age is by far the greatest risk factor for most types of dementia, including Alzheimer's disease. While family history, alcohol misuse, and chronic systemic illnesses also raise dementia risk, the incidence of dementia rises sharply with advancing age. This increased risk is presumably due to cumulative oxidative stress, vascular changes, and proteinopathies over a longer lifespan, which predispose older individuals to neurodegenerative processes.

**39.** (b) Central retinal vein occlusion

A "blood and thunder" funduscopic appearance—marked by extensive retinal hemorrhages, venous engorgement, and a swollen optic disc—is typical of central retinal vein occlusion (CRVO). In contrast, central retinal artery occlusion causes a pale retina with a cherry-red spot. Hypertensive retinopathy may produce exudates, cotton wool spots, and flame hemorrhages, but not the classic "blood and thunder" pattern. Anterior ischemic optic neuropathy affects the optic nerve head rather than causing widespread retinal hemorrhages.

**40.** (a) Diffuse Lewy body dementia

Hallucinations—especially well-formed, vivid visual hallucinations—are a hallmark of Dementia with Lewy bodies (DLB). It typically presents with parkinsonian features, fluctuations in cognition, and prominent visual hallucinations earlier in the disease course. Although patients with other dementias can have delusions or hallucinations in later stages, such occurrences are notably frequent and characteristic in DLB. This distinguishes it clinically from frontotemporal dementia, typical Alzheimer's, and vascular dementia, in which early visual hallucinations are less common.

**41.** (b) Tension type headache

Tension-type headaches are typically bilateral, often described as a "band-like" pressure around the head, and may worsen with stress or fatigue. Tenderness of the scalp muscles (or skull vault) is also common. Migraine, by contrast, is often throbbing and unilateral, cluster headaches are strictly unilateral around the orbit, and trigeminal neuralgia causes brief, shooting facial pains. The pattern of gradual worsening through the day and link to stress strongly points to tension-type headache.

**42.** (a) 1, 2 and 3

Common causes of polyneuropathy include chronic infections (like HIV), nutritional deficiencies and toxicities associated with alcohol abuse, and certain medications (phenytoin is well-documented to cause peripheral neuropathy). Rifampicin is generally not known for causing a peripheral neuropathy; instead, isoniazid (another anti-TB drug) can cause neuropathy if pyridoxine is not co-administered. Thus, HIV (1), alcohol (2), and phenytoin (3) are classic recognized causes among the listed options.

**43.** (c) 3 and 4

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Intracerebral hemorrhage (ICH) accounts for roughly 10–15% of strokes, so statement 1 (35% of all strokes) is too high. The most common site of hypertensive ICH is the basal ganglia or thalamus—not the cerebral cortex—making statement 2 incorrect. Cocaine and methamphetamine can precipitate hemorrhagic stroke in young adults (3 is correct), and hypertensive bleeds typically involve spontaneous rupture of small, deep penetrating arteries (4 is correct).

**44.** (d) 7th Cranial Nerve Palsy

Inability to close the eye on one side indicates involvement of the facial nerve (cranial nerve VII), which innervates the muscles of facial expression. The presence of vesicles in or around the ear canal (Ramsay Hunt syndrome) further confirms that a herpes zoster infection in the geniculate ganglion is likely causing the facial nerve palsy. The 8th cranial nerve (vestibulocochlear) affects hearing and balance, while CNs III and V govern other motor/sensory functions.

**45.** (a) 1, 2 and 3

A lesion in the dominant (usually left) parietal lobe—particularly around the angular gyrus—can produce language difficulties (dysphasia), acalculia, dyslexia or alexia, and other components of Gerstmann's syndrome. Contralateral (often left-sided) neglect is typically linked to a non-dominant (usually right) parietal lesion. Hence dysphasia (1), acalculia (2), and dyslexia (3) are recognized deficits with a dominant parietal lesion, whereas contralateral neglect (4) is more characteristic of the non-dominant side.

**46.** (d) 2, 3 and 4

Neurofibromatosis type 1 (NF1) features include axillary or inguinal freckling ("Crowe's sign," 2) and neurofibromas (4). "Cutaneous schwannomas" (3) can be part of the spectrum of nerve sheath tumors in NF1, though they are more classically referred to as cutaneous neurofibromas; many sources use overlapping terminology. "Angiomas" (1) are not typical hallmark features of NF1. Therefore, axillary freckles, cutaneous (nerve sheath) tumors, and neurofibromas are the key recognized features.

**47.** (b) 1, 2 and 4

Parkinson's disease classically presents with bradykinesia (slowness of movement), rigidity (often cogwheel type), and a resting tremor (not listed here) plus a masked or expressionless face. Spastic gait, however, is more associated with upper motor neuron lesions (e.g., in corticospinal tract disease). In Parkinson's, patients typically exhibit a shuffling gait with reduced arm swing, not a spastic one. Thus bradykinesia (1), rigidity (2), and mask-like face (4) are recognized hallmarks.

**48.** (b) A and B antigens on RBC; no antibody in plasma.

Individuals with AB blood group have both A and B antigens on their red blood cells, and they lack both Anti-A and Anti-B antibodies in their plasma. This allows them to receive blood of any ABO type (universal recipient) but they can only donate to other AB recipients. Option (b) perfectly describes that profile, while the other options mix or omit antigens and antibodies incorrectly.

**49.** (d) Tuberculosis

Eosinophilia commonly occurs with parasitic infections such as Toxocara or Trichinella and in certain pulmonary conditions like Loeffler's syndrome, which involves transient respiratory symptoms with blood eosinophilia. Mycobacterium tuberculosis infection usually does not cause marked peripheral eosinophilia; instead, it characteristically induces a granulomatous response. Thus TB is the least likely among these options to be associated with eosinophilia.

**50.** (d) CA-19-9

CA 19-9 is commonly elevated in pancreatic cancer and is often used in conjunction with imaging to follow disease progression or recurrence. Alpha-fetoprotein (AFP) is associated more with hepatocellular carcinoma and some germ cell tumors. CA-125 is primarily linked to ovarian cancer. Calcitonin is secreted by

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medullary carcinoma of the thyroid. Therefore, CA 19-9 is recognized as the principal tumor marker for pancreatic adenocarcinoma.

**51.** (b) 1, 2 and 4

G6PD deficiency is X-linked and is common in regions where malaria was or is endemic, because the mutant allele can confer some selective advantage against malaria parasites. Consumption of fava beans (favism) triggers rather than prevents hemolysis, so statement 3 is incorrect. In acute hemolytic crises with severe anemia, packed red blood cell transfusions can be life-saving. Hence 1, 2, and 4 accurately reflect known facts about G6PD deficiency.

**52.** (c) 1, 3 and 4

Active hemolysis leads to increased reticulocyte count (as the bone marrow responds to anemia), increased unconjugated (indirect) bilirubin, increased urinary urobilinogen (due to higher bilirubin turnover), and decreased haptoglobin (which binds free hemoglobin; it becomes consumed). Conjugated bilirubin typically rises in hepatobiliary disease, not classical hemolysis. Thus 2 (increased conjugated bilirubin) is not the usual hallmark, whereas 1, 3, and 4 reflect ongoing hemolysis.

**53.** (d) Hemolytic anemia

Dapsone can induce oxidative stress in red blood cells, particularly in individuals with G6PD deficiency, leading to hemolysis. Even in those with normal G6PD levels, Dapsone can cause dose-dependent hemolysis because it produces free radicals that damage RBC membranes. This mechanism distinguishes it from agents that cause iron deficiency, sideroblastic changes, or spur cell formation. Therefore, hemolytic anemia is the recognized complication of Dapsone.

**54.** (a) 1, 2 and 3

During pregnancy, demands for iron and folate increase substantially, often exceeding dietary intake, so iron stores (1) and folate levels (3) may drop if not supplemented. Vitamin B12 levels can also decline in pregnant women with insufficient intake (2). However, coagulation factors (such as fibrinogen) generally increase in pregnancy, contributing to a hypercoagulable state. Hence 1, 2, and 3 are decreased, while 4 is not.

**55.** (b) Apixaban

Apixaban is a direct Factor Xa inhibitor. Rivaroxaban and Edoxaban share the same mechanism. By selectively inhibiting Factor Xa, these drugs reduce thrombin generation and clot formation. Tirofiban is a GP IIb/IIIa receptor antagonist (antiplatelet), Dabigatran is a direct thrombin (Factor IIa) inhibitor, and Prasugrel is a P2Y12 ADP receptor inhibitor (also antiplatelet). Thus only Apixaban meets the criterion of direct Xa inhibition.

**56.** (b) High dose glucocorticoids with IVIgG

Severe thrombocytopenia (platelet count of 6,000/μL) with active bleeding - evidenced by menorrhagia, petechiae, and mucosal (mouth) blisterssuggests immune thrombocytopenic purpura (ITP) in a critical phase. The most rapid way to raise the platelet count is combining high-dose corticosteroids with IVIgG, particularly for life-threatening or serious bleeding. Glucocorticoids alone can be first-line for milder ITP, but here the severity and active bleeding typically prompt both treatments for an immediate effect.

**57.** (c) Megaloblastic anemia

Macrocytosis (high MCV around 128 fL), hypersegmented neutrophils, and severe anemia strongly suggest megaloblastic anemia, typically due to vitamin B12 or folate deficiency. The patient's vegetarian diet raises suspicion of inadequate B12 intake, plus the neurological symptoms (paresthesias) further point toward B12 deficiency. Iron deficiency typically shows microcytosis (low MCV). Myelophthisic anemia involves marrow infiltration, and aplastic anemia often presents with pancytopenia without the classic macro-oval RBCs and hypersegmented neutrophils seen here.

**58.** (a) Xerosis

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ofloxacin or corticosteroids (beclomethasone, mometasone) or immunosuppressants (tacrolimus) are not standard eradication therapies.

**29.** (b) Autosomal recessive

Cystic Fibrosis (CF) is an autosomal recessive genetic disease caused by mutations in the CFTR gene (Cystic Fibrosis Transmembrane Conductance Regulator). Both parents must be carriers of a single defective copy for their child to inherit two defective alleles (one from each parent) and manifest CF. This inheritance pattern differentiates it clearly from autosomal dominant or X-linked conditions. CF primarily affects the lungs, pancreas, and other exocrine glands, resulting in chronic pulmonary infections and malabsorption.

**30.** (d) 2, 3 and 4

Celiac disease (gluten-sensitive enteropathy) often coexists with other autoimmune or genetic conditions. Selective IgA deficiency, Down syndrome, and Turner's syndrome have well-documented associations with celiac disease. Type 1 diabetes mellitus is also commonly linked with celiac disease—however, Type 2 diabetes mellitus is not specifically connected. Therefore, IgA deficiency (2), Down syndrome (3), and Turner's syndrome (4) are correct associations, making option 2, 3, and 4 the right choice.

**31.** (a) 1, 2 and 3

Celiac disease is strongly linked to HLA-DQ2 or DQ8 haplotypes (statement 1) and is caused by gluten intolerance (in wheat, rye, barley—and often oats). In older patients, it may present with varied symptoms, including malabsorption, weight loss, and iron deficiency anemia, among others (statement 3). Far from being contraindicated, small bowel biopsy (duodenal biopsy) is the gold standard for diagnosis; therefore, statement 4 is false. Thus statements 1, 2, and 3 are correct.

**32.** (a) 10^5 organisms/mL in the urine of apparently healthy asymptomatic patients.

Asymptomatic bacteriuria typically is defined as $\geq 10^5$ CFU (colony-forming units) per mL of urine in individuals without urinary symptoms. In women, two consecutive clean-catch specimens are generally required for confirmation; in men, a single specimen can suffice. Counts below $10^5$ CFU/mL may be clinically relevant in symptomatic urinary tract infections, but do not fulfill the classic definition of asymptomatic bacteriuria in an otherwise healthy individual.

**33.** (d) Diabetes mellitus

Type 1 or Type 2 diabetes mellitus is not a contraindication to renal transplantation; in fact, many transplant candidates have diabetic nephropathy as the cause of end-stage renal disease. An active malignancy, however, is a strong contraindication until remission is assured, and extreme youth (under one year) or advanced age (over 75) can represent relative or practical barriers to transplantation in some centers. Diabetes itself does not preclude successful kidney transplant.

**34.** (c) 1, 3 and 4

In CKD, the principal causes of anemia are decreased erythropoietin (EPO) production (statement 1), toxic effects of uremia on red cell production (3), and issues with iron utilization—often termed "functional iron deficiency" (4). While folate and B12 deficiency can occur in the general population, they are not typical, direct mechanisms driving CKD-related anemia. Instead, reduced EPO and poor iron handling are the primary culprits, compounded by the inhibitory effects of accumulated uremic toxins on RBC production.

**35.** (a) Diabetic nephropathy

Worldwide, diabetic nephropathy (especially in Type 2 diabetes) is the most common cause of end-stage renal disease (ESRD). Chronic hyperglycemia damages the glomeruli, leading to proteinuria, declining renal function, and eventual kidney failure if not controlled. While hypertension and glomerulonephritis are also significant contributors to CKD, diabetes now tops the list in many regions, correlating with

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Classic diabetes insipidus features profuse, dilute urine (low osmolality, low specific gravity) and compensatory polydipsia (statements 1 and 2). If the thirst center is damaged or if the patient cannot drink, the inability to replace free water can be life-threatening (4). Lithium is actually a cause of nephrogenic DI, not a treatment. Desmopressin or measures to correct underlying issues are useful in therapy, not lithium.

**66.** (a) 1, 2 and 3

This clinical picture is highly suggestive of hypothyroidism (fatigue, constipation, weight gain, possible effusion impacting hearing). The most appropriate initial investigations are serum TSH and free $T_4$ to confirm thyroid underactivity, and anti–thyroid peroxidase (TPO) antibodies to assess for autoimmune (Hashimoto's) etiology. A radionuclide thyroid scan is more useful in hyperthyroidism or evaluating nodules rather than diagnosing straightforward primary hypothyroidism. Thus (1), (2), and (3) are the key tests.

**67.** (a) 1, 2 and 3

In acute adrenal crisis, the mainstays of treatment are immediate volume resuscitation with intravenous normal saline (1) and prompt IV hydrocortisone (2). Hypoglycemia can occur, so adding IV dextrose (e.g., 5–10% glucose) is also appropriate (3). Potassium is often elevated or normal in primary adrenal insufficiency, so routine KCl infusion (4) is not indicated unless specific hypokalemia exists. Rapid intervention with fluids and steroids is life-saving while awaiting lab confirmation (serum cortisol).

**68.** (c) Chronic metabolic acidosis

Among critically ill populations—especially those with sepsis, shock, or end-organ hypoperfusion—lactic acidosis and other causes of metabolic acidosis are very frequent. While acute forms predominate, chronic or ongoing metabolic acidosis can also occur in prolonged illness or organ failure. Respiratory alkalosis or acidosis may be seen but is often more transient or influenced by mechanical ventilation. Metabolic alkalosis is less common in the severely ill. Hence "chronic metabolic acidosis" is generally cited as the most prevalent disturbance.

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**69.** (d) 1, 2, 3 and 4

All listed conditions can contribute to weight gain, yet can also be addressed or reversed. Insulinoma (1) over-secretes insulin, causing excessive food intake and adiposity; surgical removal can reverse this. Cushing's syndrome (2) may be managed by correcting hypercortisolism. Sulfonylureas (3) stimulate insulin release and lead to weight gain, which can be mitigated by changing medications. Beta-blockers (4) can reduce metabolic rate or exercise capacity, but switching to alternative agents can lessen weight gain.

**70.** (a) 1, 2 and 3

Parenteral nutrition frequently leads to hyperglycemia (1) if dextrose infusion is excessive. Over long durations, TPN can cause progressive liver dysfunction—ranging from steatosis to cholestasis and eventually cirrhosis (2). Fluid overload (3) can occur when intravenous volumes are high. Hyperphosphatemia is not typically a problem in TPN; more commonly, refeeding syndrome features hypophosphatemia. Thus 1, 2, and 3 are recognized metabolic complications, while 4 (hyperphosphatemia) is not usual.

**71.** (d) Clostridium difficile

Clostridium difficile overgrowth in the colon—often triggered by antibiotic use—causes pseudomembranous colitis, characterized by diarrhea (sometimes severe), abdominal pain, and typical pseudomembrane formation on endoscopy. It is not associated with Entamoeba histolytica (which causes amebic dysentery), Salmonella typhi (typhoid fever), nor routine E. coli infection. C. difficile produces toxins that damage the colonic mucosa, leading to the hallmark pseudomembranes.

**72.** (a) Slapped cheek rash

In children, Parvovirus B19 commonly causes "erythema infectiosum" (Fifth disease), which presents with a bright red, "slapped cheek"

facial rash. This distinguishing feature contrasts with the malar rash ("butterfly rash") of lupus, melasma-like hyperpigmentation, or the "Christmas tree rash" seen in pityriasis rosea. The slapped cheek rash can be followed by a more diffuse, lacy rash on the body, but the name itself derives from the dramatic red flush on the child's cheeks.

**73.** (a) 1, 2 and 3

Different Bartonella species cause various human diseases: _Bartonella henselae_ causes cat scratch disease (1), _Bartonella quintana_ causes trench fever (2), and _Bartonella bacilliformis_ causes Carrion's disease (3). Anisakiasis (4) is an intestinal infection from the Anisakis worm in undercooked seafood and is unrelated to Bartonella. Additionally, Bartonella species can lead to culture-negative endocarditis, making them notable pathogens in certain cardiovascular infections.

**74.** (c) Orientia tsutsugamushi and Trombiculid mite

Scrub typhus is caused by _Orientia (formerly Rickettsia) tsutsugamushi_, transmitted by the bite of infected chiggers (the larval stage of trombiculid mites). _Rickettsia rickettsii_ causes Rocky Mountain spotted fever (via ticks), _Rickettsia prowazekii_ causes epidemic typhus (via body lice), and lice also transmit trench fever (Bartonella quintana). The specific vector for scrub typhus is the trombiculid (chigger) mite, making option (c) correct.

**75.** (a) 1, 2 and 3 only

In classical descriptions, "risus sardonicus" (1) is indeed observed in tetanus due to facial muscle spasm; "lockjaw" (trismus) is a key feature, sometimes stated in older question banks as "painless," though in reality it is usually quite distressing. The toxin is actually an exotoxin (tetanospasmin) that travels via nerve endings (the question's term "endotoxin" in 2 is imprecise but often accepted in older exams). While hysteria can produce muscle contractions mimicking tetanus, many sources traditionally exclude it from "correct statements."

**76.** (a) 1, 2 and 3

Standard prophylaxis options for travelers to regions with chloroquine-resistant malaria often include atovaquone–proguanil or doxycycline. Mefloquine, however, is relatively contraindicated in patients with a history of depression or seizures because of its neuropsychiatric side effects and lowered seizure threshold. Although in real-world practice chloroquine–proguanil is not favored in India due to falciparum resistance, older questions often consider it "safe" from the standpoint of a seizure/depression history. Hence among the listed choices, (1), (2), and (3) are acceptable, excluding mefloquine.

**77.** (a) 1 and 2 only

Both Ascaris lumbricoides and Strongyloides stercoralis have larval migratory phases that pass through the lungs, which can cause respiratory or eosinophilic reactions (Löffler's syndrome). Onchocerca volvulus primarily affects subcutaneous tissues and the eyes (river blindness), rather than undergoing a significant pulmonary migration. Hence only statements (1) Ascaris and (2) Strongyloides share the classic "lung phase" during their life cycles.

**78.** (b) 2, 3 and 4

Amphotericin B is actually broad-spectrum (so statement 1 is false). It is well known to cause nephrotoxicity (2), is not orally absorbed (3), and lipid formulations (e.g., liposomal Amphotericin B) generally have reduced renal toxicity (4). Hence statements 2, 3, and 4 are correct.

**79.** (a) Rhizopus

Mucormycosis (sometimes dubbed "black fungus") is most often caused by fungi in the Mucorales order, notably _Rhizopus_ species. These aggressive infections typically occur in immunocompromised or diabetic patients and can invade blood vessels, causing tissue necrosis. Aspergillus, Candida, and Histoplasma cause other distinct fungal infections but do not produce classic mucormycosis.

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**80.** (c) 1, 3 and 4

Malaria, filariasis (e.g., Wuchereria bancrofti), and dengue fever are transmitted by various mosquito species (Anopheles for malaria, Culex or Anopheles for filariasis, Aedes for dengue). Typhus, in contrast, is typically transmitted by lice (epidemic typhus) or fleas (endemic typhus), not mosquitoes. Therefore, (1), (3), and (4) are the correct mosquito-borne infections.

**81.** (d) Triceps skin fold < 3 mm

Marasmus is a form of severe malnutrition characterized by marked wasting of subcutaneous fat and muscle. A key clinical indicator is very low triceps skinfold thickness (often <3 mm), reflecting loss of fat stores. While low albumin can be seen in protein–energy malnutrition, that is more classically associated with kwashiorkor. Anergy can occur but is not as specific a "hallmark" sign as the profound thinning seen in marasmus.

**82.** (d) Mixed connective tissue disorder

High titers of anti-U1-ribonucleoprotein (anti-RNP) are characteristically associated with Mixed Connective Tissue Disease (MCTD). Patients often present with overlapping features of systemic lupus erythematosus, scleroderma, and polymyositis. In contrast, Sjögren's syndrome is tied to anti-SSA/SSB (anti-Ro/La), diffuse systemic sclerosis to anti-Scl-70 (anti–topoisomerase I), and sarcoidosis does not center on this antibody.

**83.** (d) 40 – 50 years

Polyarteritis nodosa (PAN), a necrotizing vasculitis affecting medium-sized arteries, most frequently occurs in adults, commonly in middle age. Epidemiologic data show the highest incidence clusters in the 40–60 year range, so of the options given, 40–50 years is the best fit. Pediatric cases can occur but are less common.

**84.** (a) Bisphosphonates

Bisphosphonates (e.g., alendronate, risedronate) are considered the first-line pharmacologic therapy in most patients with osteoporosis to reduce the risk of osteoporotic fractures. They inhibit osteoclast-mediated bone resorption, improving bone density. Denosumab (RANKL inhibitor) is another potent agent but often used when patients cannot tolerate or fail bisphosphonates. Teriparatide (PTH analog) is generally reserved for severe or refractory cases. Raloxifene (a selective estrogen receptor modulator) can help spinal bone density but is not typically first-line overall.

**85.** (b) 1, 2 and 4

Amitriptyline, dosulepin (also known as dothiepin), and imipramine are all classical tricyclic antidepressants (TCAs). Paroxetine, on the other hand, is a selective serotonin reuptake inhibitor (SSRI). Hence (1) amitriptyline, (2) dosulepin, and (4) imipramine are the TCA agents, while (3) paroxetine is not.

**86.** (a) Bulimia nervosa

Bulimia nervosa is characterized by recurrent episodes of binge eating followed by inappropriate compensatory behaviors (e.g., self-induced vomiting, laxative abuse). By contrast, anorexia nervosa involves severe restriction of intake or sometimes binging/purging but with significant underweight status. Post-partum depression and certain personality disorders may affect eating patterns but are not typically defined by recurrent binge eating in the same sense as bulimia nervosa.

**87.** (c) $L_4$

The patellar (knee) jerk reflex primarily tests the L2–L4 segments, but L4 is the most clinically relevant single root for the quadriceps reflex. Weak or absent knee jerk with potential quadriceps weakness often implicates the L3–L4 disc/nerve involvement. L5 nerve root issues more often affect dorsiflexion (ankle or big toe), and S1 is usually tested via the ankle jerk.

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**88.** (a) 1, 2, 3 and 4

Retinoblastoma (germline RB1 mutation), Li-Fraumeni syndrome (TP53 mutations), Xeroderma pigmentosum (defective nucleotide excision repair genes), and Peutz-Jeghers

**22.** Fecal elastase test is used for diagnosing which one of the following conditions?
(a) Lactose intolerance
(b) Mucosal inflammation
(c) Bile acid secretory defects
(d) Pancreatic dysfunction

**23.** The recent classification system for listing a patient as a candidate for liver transplantation is:
(a) Child Pugh score
(b) APACHE score
(c) MELD score
(d) Metavir score

**24.** The blood supply of liver consists of:
(a) 50 % hepatic artery and 50 % portal vein
(b) 80 % portal vein and 20 % hepatic artery
(c) 80 % hepatic artery and 20 % portal vein
(d) 70 % hepatic artery and 30 % portal vein

**25.** All of the following conditions are associated with Glomerulonephritis with low complement level, EXCEPT:
(a) Subacute bacterial endocarditis
(b) IgA nephropathy
(c) Systemic lupus erythematosus
(d) Cryoglobulinaemia

**26.** Consider the following statements with regard to oral aphthous ulcers:
1. They are superficial and painful
2. They may occur in women just prior to menstruation
3. Oral glucocorticoids may be needed for the treatment of severe, recurrent cases
4. They are pre-malignant and progress over few years to squamous cell carcinoma of the oral cavity

Which of the above statements are correct?
(a) 1 and 4 only
(b) 2 and 3 only
(c) 1, 2 and 3 only
(d) 1, 2, 3 and 4

**27.** Which one of the following statements about Barrett's Oesophagus is NOT correct?
(a) It is a pre-malignant condition
(b) Normal squamous cells lining the lower oesophagus are replaced by columnar cells
(c) Normal columnar cells lining the lower oesophagus are replaced by squamous cells
(d) It is an adaptive response to chronic gastro-oesophageal reflux

**28.** The most common cause of acute hepatitis outbreaks in India is:
(a) Hepatitis E
(b) Hepatitis C
(c) Hepatitis B
(d) Hepatitis A

**29.** Spontaneous oesophageal perforation after a bout of forceful vomiting or retching is characteristically seen in which one of the following conditions?
(a) Menetrier's disease
(b) Boerhaave's syndrome
(c) Achalasia of the oesophagus
(d) Barrett's oesophagus

**30.** Eradication of helicobacter pylori infection may prove beneficial in the following extra-gastric disorders EXCEPT:
(a) Unexplained vitamin B12 deficiency
(b) Idiopathic thrombocytopenic purpura
(c) Iron deficiency anaemia without gastro-intestinal bleeding
(d) Acute glomerulonephritis

**31.** What is the target blood Hemoglobin level when treating anaemia in Stage-4 chronic kidney disease patient?
(a) 8 to 10 gm/dL
(b) 10 to 12 gm/dL
(c) 12 to 13 gm/dL
(d) 13 to 14 gm/dL

**32.** Which one of the following complications of chronic kidney disease is observed in patients with low parathyroid hormone levels?
(a) Adynamic bone disease

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In dengue fever with warning signs (e.g., persistent vomiting, rising hematocrit) but stable blood pressure, moderate fluid replacement is started to compensate for plasma leakage. WHO guidelines often suggest an initial rate of around 5–7 mL/kg/hour for those with some signs of plasma loss yet no hypotension. Going too low may not correct hemoconcentration, and jumping straight to 10 mL/kg/hour is usually reserved for more severe or hypotensive states. Therefore, 7 mL/kg/hour is a typical, appropriate starting rate.

**98.** (d) Therapeutic lumbar puncture

In a child with potential head injury and raised intracranial pressure (ICP), one must avoid interventions (like a lumbar puncture) that could precipitate cerebral herniation if ICP is significantly elevated. Mannitol or hypertonic saline may be used to reduce ICP, and elevating the head end helps venous drainage. A "therapeutic lumbar puncture" is contraindicated in cases of possible acute intracranial bleeding or high ICP for risk of sudden pressure shifts.

**99.** (b) 30 : 2

Current pediatric BLS guidelines align with adult practice when only one rescuer is available: 30 compressions followed by 2 rescue breaths. The 15:2 ratio is used only when two trained rescuers are present for infants or children. The single rescuer must maintain a straightforward ratio (30:2) to keep compressions going with minimal interruption for ventilations.

**100.** (d) Eye opening to pain, cries to pain and extension to pain

In the pediatric-modified GCS, E2 indicates eye opening to pain (not to speech, which would be E3). V3 often corresponds to "cries or inappropriate verbal response" for a young child. M2 signifies extension (decerebrate response) to painful stimuli rather than abnormal flexion (which is M3). Thus "eye opening to pain, cries to pain, and extension to pain" best matches E2V3M2.

**101.** (c) The abdomen will be warm, but the hands and feet will be cold.

In mild hypothermia (often referred to as "cold stress"), peripheral vasoconstriction keeps the core warmer than the extremities. Hence the baby's trunk (abdomen) typically remains warm, but the hands and feet feel cold to touch. Moderate or severe hypothermia would extend the cooling centrally. The initial sign is usually cooler extremities with a relatively warm abdomen.

**102.** (b) Dilated cardiomyopathy

Severe hypocalcemia can impair myocardial contractility, occasionally presenting as heart failure or a dilated cardiomyopathy picture. Nausea and vomiting are more frequently linked with hypercalcemia. Likewise, hypercalcemia more commonly triggers polyuria and polydipsia because of its effect on the renal tubules and thirst regulation. By contrast, hypocalcemia is notorious for neuromuscular excitability (tetany, paresthesias), prolonged QT interval, and possible heart dysfunction rather than the GI or renal findings typical of hypercalcemia.

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**103.** (d) Congenital hypothyroidism

Prolonged unconjugated (indirect) hyperbilirubinemia beyond the neonatal period can result from congenital hypothyroidism. Hypothyroidism reduces bilirubin metabolism via lower activity of the UDP-glucuronyl transferase, leading to persistent neonatal jaundice. Dubin-Johnson and Rotor syndromes are predominantly conjugated hyperbilirubinemias, and while galactosemia can cause both direct and indirect hyperbilirubinemia, it more typically presents with significant liver dysfunction and conjugated hyperbilirubinemia.

**104.** (d) Tracheoesophageal fistula

Polyhydramnios arises when the fetus cannot swallow amniotic fluid normally, often due to an esophageal obstruction. After birth, drooling, frothing at the mouth, and choking with the first feeds suggest an inability to pass fluid into the stomach. Tracheoesophageal fistula (especially with esophageal atresia) is classic for these findings: fluid or milk cannot pass into the GI tract and may instead enter the trachea, leading to choking and respiratory distress.

# QUESTION PAPER 2020

1. A chronic alcoholic develops a paroxysm of palpitations after alcohol binge. Which of the following Arrhythmia is most likely?
   (a) Ventricular fibrillation
   (b) Ventricular premature complex
   (c) Atrial flutter
   (d) Atrial fibrillation

2. An elderly-man with history of Diabetes mellitus and Coronary Artery Disease comes for follow-up, with complaints of muscle pains. Which one of the following drugs could be the most likely cause?
   (a) Aspirin
   (b) Glimepiride
   (c) Enalapril
   (d) Atorvastatin

3. A 40-year old lady comes to outdoor clinic with complaints of sudden onset chest pain. The chest X-ray shows bilateral Pneumothorax. Examination reveals abnormalities of body habitus-including long arms, legs and finger (arachnodactyly), scoliosis, high arched palate, joint hypermobility, and a pansystolic murmur at cardiac apex. Which one of the following diseases is most likely?
   (a) Takayasu's arteritis
   (b) Raynaud's syndrome
   (c) Marfan's syndrome
   (d) Rheumatic heart disease-Mitral regurgitation

4. All of the following are indications for treadmill testing/exercise-testing EXCEPT:
   (a) To confirm the diagnosis of angina
   (b) To evaluate stable angina
   (c) To assess outcome after coronary revascularization
   (d) To evaluate the treatment efficacy of antianginal drugs

5. Kussmaul's sign is present in all of the following conditions, EXCEPT:
   (a) Massive Pulmonary Embolism
   (b) Restrictive Cardiomyopathy
   (c) Hypertrophic Cardiomyopathy
   (d) Right Ventricular Infarction

6. Which one of the following is NOT a common cause of atrial fibrillation?
   (a) Mitral regurgitation
   (b) Hypothyroidism
   (c) Hypertension
   (d) Acute myocardial infarction

7. In an ECG recording, P wave is produced by:
   (a) Atrial depolarisation
   (b) Atrial repolarisation
   (c) Ventricular depolarisation
   (d) Ventricular repolarisation

8. Which one of the following modalities is NOT used in the treatment of ventricular tachycardia?
   (a) DC Cardioversion
   (b) Injection Lignocaine
   (c) Injection Amiodarone
   (d) Injection Adenosine

9. Which one of the following drugs is a Direct Renin Inhibitor?
   (a) Benedipine
   (b) Azilsartan
   (c) Aliskiren
   (d) Lisinopril

10. All of the following are causes of systolic hypertension with wide pulse pressure EXCEPT:
    (a) Aortic regurgitation
    (b) Thyrotoxicosis
    (c) Patent ductus arteriosus
    (d) Aortic stenosis

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repetitive behaviors or sensory peculiarities (toe walking, for instance). Delayed speech, decreased joint attention, and poor social interaction are core red flags. While ADHD involves inattentiveness, it does not typically manifest with marked social-communication deficits or toe walking. Cerebral palsy primarily affects motor development. Social Communication Disorder lacks the restricted/repetitive patterns often seen in ASD.

**114.** (c) Hyperactivity

Atomoxetine is a selective norepinephrine reuptake inhibitor originally indicated for Attention Deficit Hyperactivity Disorder (ADHD). In some children on the autism spectrum who display prominent hyperactivity and inattention, atomoxetine can help reduce those symptoms. It is not primarily targeted at anxiety, sleep disturbances, or repetitive behaviors, which may require other interventions or medications. Thus, it is most directly used to manage hyperactivity/impulsivity within the context of ASD.

**115.** (b) 6 weeks and 14 weeks

Under India's current National Immunization Program, fractional (intradermal) IPV doses are administered at 6 and 14 weeks of age alongside the oral polio vaccine (OPV) schedule. This two-dose fractional approach is recommended to enhance early immunity and eventually reduce polio transmission risks. The older approach or other country schedules may vary, but for India, "6 weeks and 14 weeks" matches the standard fractional IPV practice.

**116.** (d) 90%

Varicella (chickenpox) vaccine, if administered within 3 (and up to 5) days of exposure, has demonstrated around 90% efficacy in preventing clinical disease or substantially reducing its severity. This makes timely vaccination an excellent strategy for post-exposure prophylaxis in susceptible individuals. Efficacy declines if given much later than 72–120 hours after contact, reinforcing the benefit of early intervention.

**117.** (a) Dyslexia

Dyslexia is a specific learning disorder primarily affecting the ability to read, spell, and decode written language. It presents with trouble recognizing and processing letters and words, yet oral comprehension and general intelligence are typically not impaired. Autism spectrum disorder involves broader social-communication deficits, Rett syndrome primarily affects girls and includes regression after normal development, and ADHD focuses on inattention/hyperactivity. The key pointer here is difficulty with word recognition and spelling in the presence of normal listening comprehension.

**118.** (d) 'Time out'

During a tantrum, the recommended approach is to remain calm and consistent. "Time out" briefly removes the child from the immediate environment and attention, discouraging the undesirable behavior. Giving in to demands reinforces tantrums. Physical punishment and scolding can escalate aggression and do not teach self-regulation. By contrast, a brief, structured time out (in a safe, dull space) can help the child calm down and learn that tantrums are not rewarded.

**119.** (c) On 3, 7, 14, 21, 28 and 42 days of life

Under India's Home Based Newborn Care (HBNC), for babies born in a health facility, the ASHA worker conducts home visits typically on days 3, 7, 14, 21, 28, and 42 post-discharge to monitor the infant's health, feeding, and weight gain. This schedule ensures early detection of neonatal problems and provides basic counseling for breastfeeding, warmth, and hygiene. The other listed schedules either omit or alter recommended days as per the current standard guidelines.

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**120.** (a) Rheumatic heart disease

RBSK (Rashtriya Bal Swasthya Karyakram) focuses on early detection and management of 4 Ds—Defects at birth, Diseases in children, Deficiencies, and Developmental delays. Among the conditions covered in its expanded list is Rheumatic Heart Disease (RHD), recognized as a preventable cardiac ailment if identified early and managed. Community-acquired pneumonia, systemic JIA, and nephrotic

syndrome (STK11 mutation) are all classic examples of inherited cancer susceptibility syndromes. Each has a distinct genetic lesion conferring increased tumor risk.

**89.** (a) 1, 2 and 3

Trinucleotide repeat expansions underlie Huntington's disease (CAG repeats), myotonic dystrophy (CTG repeats), and Friedreich's ataxia (GAA repeats). Klinefelter syndrome is a chromosomal aneuploidy (47, XXY), not a repeat-expansion disorder. So (1) Huntington's, (2) Myotonic dystrophy, and (3) Friedreich's ataxia are the correct associations.

**90.** (d) DiGeorge syndrome

DiGeorge syndrome (22q11.2 deletion) is classically associated with congenital heart defects (often conotruncal anomalies), thymic aplasia or hypoplasia (leading to T-cell deficiency), parathyroid aplasia (hypocalcemia), and craniofacial anomalies including cleft palate. These are well-known hallmarks that differentiate DiGeorge syndrome from the other listed genetic conditions.

**91.** (d) Loss of intravascular volume into the soft tissues

Many viperine snake venoms increase vascular permeability and cause local or systemic edema and third spacing of fluid, which can rapidly lower effective circulating volume. This leads to early hypotension (shock). While bleeding or hemolysis may occur in severe envenomation, the sudden hypotension generally reflects intravascular fluid loss into tissues. Pooling of blood in the pulmonary circulation is not typical for immediate hypotension.

**92.** (a) 1, 2 and 3

Ingestion of corrosives (strong acids or alkalis) or petroleum distillates presents a high risk of further esophageal or airway injury if emesis or lavage is attempted. Consequently, guidelines advise against gastric lavage for such substances. Ethanol overdose alone is not an absolute contraindication, though in practice it may not be beneficial. Therefore, (1), (2), and (3) are recognized contraindications to gastric aspiration/lavage.

**93.** (b) Paracetamol

N-acetylcysteine (NAC) replenishes intracellular glutathione, helping detoxify the toxic NAPQI metabolite produced from paracetamol (acetaminophen) overdose. It reduces liver injury if given promptly. It is not the specific antidote for salicylates, TCA overdose, or benzodiazepine toxicity (for which flumazenil is sometimes used). NAC is thus the classic paracetamol antidote.

**94.** (b) Beta-2 adrenoceptor antagonist

Management of severe hyperkalemia includes IV calcium gluconate to stabilize the cardiac membrane, agents to shift potassium intracellularly (e.g., insulin + glucose, beta-2 agonists such as nebulized salbutamol), sodium bicarbonate (if acidotic), and dialysis if needed. A beta-2 adrenoceptor antagonist (such as propranolol) would worsen hyperkalemia by hindering potassium entry into cells. Thus (b) is not part of standard therapy.

**95.** (c) South-West India

Kyasanur Forest Disease (KFD) is a tick-borne viral hemorrhagic fever found in forested areas of the Western Ghats region in southwestern India. First identified in the Kyasanur Forest of Karnataka state, it remains localized there, not in Africa, the Balkans, or the Americas.

**96.** (c) Pulmonary embolism

Type 2 (hypercapnic) respiratory failure arises from inadequate ventilation. Conditions that impair the mechanics of breathing or neuromuscular drive—like Guillain-Barré syndrome (muscle weakness), upper airway obstruction, or flail chest—can cause $CO_2$ retention. Pulmonary embolism predominantly leads to acute V/Q mismatch and hypoxemia without hypercapnia (Type 1 respiratory failure), unless in catastrophic situations with profound shock. Hence PE is "not a usual cause" of Type 2 respiratory failure.

**97.** (c) Ringer lactate @ 7 mL/kg/hour

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**105.** (a) 4 weeks

A social smile (smiling back responsively) typically emerges around 6 weeks of age. Before that time—at around 4 weeks—an infant may follow a caregiver's face and watch intently but not truly "smile back" yet. Thus, if the baby is looking intently but still not smiling socially, 4 weeks is the most plausible age. By 6–8 weeks, most infants reliably demonstrate a social smile.

**106.** (c) 24 months

A mature pincer grasp (tip-to-tip) typically appears close to 1 year, but building a tower of ~6 blocks and making basic strokes with a pencil both fall around 2 years (24 months). An 18-month-old usually stacks fewer blocks (3–4). By 24 months, children often can stack 6 or more blocks and produce simple scribbles or short pencil lines. At 36 months, they can make 9–10 block towers and more complex drawings.

**107.** (a) Scribbling

Creeping upstairs and stacking two blocks suggest an age range of around 15 months. By that time, children commonly begin scribbling spontaneously when given a crayon. Running usually appears a bit later (closer to 18 months or beyond), and using 10 words may occur around 18 months. "Exploring drawers" or more complex manipulative tasks also come along but typically after simple scribbling is well established.

**108.** (b) Copy a cross

Riding a tricycle, hopping on one foot (but not skipping), and descending stairs with alternating feet are typical of a 4-year-old. By this age, the child usually can copy a cross (+). Copying a triangle or rectangle is more advanced (often closer to 5–6 years). "Build a gate with blocks" is less standardized and might be possible even earlier. Developmentally, a 4-year-old's pencil skills typically include drawing a cross and beginning to draw simple figures.

**109.** (d) Copying a circle

By 2 years of age, children can typically build a tower of about 6 blocks, turn doorknobs, and unscrew lids with some dexterity. However, accurately copying a circle is generally expected around 3 years old. At 2, scribbling is common, but forming a proper circle on request usually awaits more advanced fine-motor and visual-motor coordination (around 3 years).

**110.** (a) The infant can bring his hands to the midline.

Around 4 months, babies typically have good head control and often bring their hands together at midline. They also begin to grasp and bat at objects with both hands but may not yet be consistently reaching out one-handed with fine precision. Monosyllables like "da/pa" commonly appear closer to 6 months or beyond. Partial head control is achieved by around 2–3 months, so (b) is not age-appropriate at 4 months.

**111.** (c) Lund and Browder chart

For pediatric burn assessments, the Lund and Browder chart is preferred because it accounts for changes in body surface area proportions with growth. The "Rule of Nines," commonly used in adults, is less accurate in children. Parkland formula calculates fluid requirements rather than body surface estimation. The Lund and Browder method remains the most reliable, age-adjusted tool for burn percentage in children under 15.

**112.** (d) Metabolic acidosis

Acute salicylate (aspirin) overdose typically causes an initial respiratory alkalosis (due to direct respiratory center stimulation) but then leads to a high-anion-gap metabolic acidosis, especially in children. Hyperkalemia is not typical of aspirin poisoning; hypokalemia may occur. Rhabdomyolysis or a markedly widened QRS complex are not classic features of salicylism. The hallmark is the mixed respiratory alkalosis plus metabolic acidosis, with potentially life-threatening acidemia in advanced stages.

**113.** (b) Autism Spectrum Disorder

Autism Spectrum Disorder (ASD) is characterized by deficits in social communication (reduced eye contact, unresponsiveness to name) and often

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**11.** Signet-ring sign on CT-chest is suggestive of:
(a) Bronchiectasis
(b) Active alveolitis
(c) Aspergilloma
(d) Sarcoidosis

**12.** Oral corticosteroids are best introduced in the treatment of chronic bronchial asthma when it is:
(a) Mild persistent
(b) Moderate persistent
(c) Severe persistent
(d) Very severe persistent

**13.** An 18-year old male has insulin dependent diabetes, with malabsorption syndrome and bilateral upper lobe bronchiectasis. A diagnostic work-up will include all EXCEPT:
(a) 24 hour fecal fat-estimation
(b) CT-chest
(c) Lung biopsy
(d) DNA sequencing study

**14.** Which one of the following antigens is commonly associated with causation of Farmer's lung?
(a) Penicillium
(b) Actinomycetes
(c) Aspergillus
(d) Candida

**15.** The Gene X-pert test used for MTB detection has the additional advantage of detection of which of the following?
(a) INH resistance
(b) Rifampicin resistance
(c) Multi drug resistance
(d) Ethambutol resistance

**16.** The most common cause of chronic type II respiratory failure is:
(a) Severe pneumonia
(b) Severe COPD
(c) Severe bronchial asthma
(d) Severe pulmonary thromboembolism

**17.** The most frequent symptom in respiratory diseases is:
(a) Breathlessness
(b) Chest pain
(c) Hemoptysis
(d) Cough

**18.** A 26-year old young lady attends medical emergency and is labelled as acute severe asthma by the emergency physician. Which one of the following is unlikely to be a part of the prescription?
(a) Albuterol
(b) Anti-leukotrienes
(c) Aminophylline
(d) Magnesium sulfate

**19.** Consider the following statements with regard to respiratory examination:
1. Change in note, when patient phonates "EEE" (Egophony) is characteristic of interstitial fibrosis
2. Whispered pectoriloquy is characteristic of lung consolidation
3. Monophonic wheeze is characteristic of asthma
4. Hyper-resonant note on percussion is characteristic of pneumothorax

Which of the above statements are correct?
(a) 1 and 3
(b) 2 and 4
(c) 1, 2 and 4
(d) 2, 3 and 4

**20.** All of the following are causes of exudative Pleural Effusion, EXCEPT:
(a) SVC obstruction
(b) Fungal infection
(c) SLE
(d) Meig syndrome

**21.** Which one of the following is NOT true about Ghrelin?
(a) It stimulates appetite
(b) It decreases gastric emptying
(c) It increases acid secretion
(d) Fasting increases its secretion

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syndrome are not explicitly listed in the priority diseases under RBSK. RHD screening is a key part of the program's disease category.

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(b) Tumoral calcinosis
(c) Osteitis fibrosa cystic
(d) Calciphylaxis

**33.** All of the following statements about adult polycystic kidney disease are true, EXCEPT:
(a) It is inherited as autosomal dominant trait
(b) It is usually associated with marked proteinuria
(c) It is usually associated with systematic hypertension, from young age
(d) It is associated with Berry aneurysm

**34.** Consider the following statements in relation to an adult patient:
1. Oliguria is defined as passage of urine less than 300 ml per day
2. Anuria is said to exist when less than 50 ml urine is passed per day
3. Polyuria is defined as urine volume in excess of 3 litre per day

Which of the statements given above are correct?
(a) 1 and 3 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

**35.** White cell casts in urine examination are strongly suggestive of:
(a) Nephritis
(b) Pyelonephritis
(c) Renal stone disease
(d) Papillitis

**36.** A 13-year old boy presents with hematuria, oliguria, edema and hypertension. He has history of sore throat two weeks prior to presentation. Laboratory investigations are remarkable for low C3 and increased titres of ASO and antiDNase. Which one of the following statements is NOT correct about management for this condition?
(a) Renal biopsy is rarely required for making diagnosis
(b) Antibiotic treatment is given for streptococcal infection
(c) Treatment is largely supportive
(d) Immunosuppressants are to be used for crescentic glomerulonephritis

**37.** Which one of the following statements is NOT correct regarding the risk factors for nephrolithiasis?
(a) Higher dietary calcium increases risk
(b) Higher animal protein intake increases risk
(c) Higher dietary potassium intake lowers risk
(d) Lower urine citrate increases the risk

**38.** A 60-year old patient is admitted in emergency with seizure, aphasia and altered sensorium. He has history of fever and headache for the preceding 3 days. The CSF examination is unremarkable. What would be the probable diagnosis?
(a) Multiple sclerosis
(b) Tubercular meningitis
(c) Pyogenic (bacterial) meningitis
(d) Viral encephalitis

**39.** Drug of choice for the treatment of Trigeminal Neuralgia is:
(a) Carbamazepine
(b) Aceclofenac
(c) Thiamine
(d) Prednisolone

**40.** Constructional skills is a function of which lobe?
(a) Dominant temporal lobe
(b) Non dominant parietal lobe
(c) Frontal lobe
(d) Non dominant temporal lobe

**41.** Vertical gaze palsy with convergence retraction nystagmus is seen in:
(a) Weber syndrome
(b) Millard Gubler syndrome
(c) Claude syndrome
(d) Parinaud syndrome

**42.** A patient on looking forward was found to have his right eye deviated downwards and outwards with pupil dilated. He is suffering from:
(a) Left 3rd nerve palsy

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(d) Amiodarone

**103.** Which one of the following is a sign of good attachment during breastfeeding?
(a) The baby's nose is at the level of the nipple
(b) The baby's chin touches the breast
(c) Most of the nipple is in the mouth and the lower areola is visible
(d) The baby's lower lip is inverted

**104.** Which one of the following signs is NOT included as an indicator of a vigorous baby immediately after delivery of an infant born through meconium strained liquor?
(a) Pink colour
(b) Strong respiratory efforts
(c) Good muscle tone
(d) Active movements of the baby

**105.** All are true for a Cephalhematoma in a newborn EXCEPT:
(a) It is located over the parietal bones in the subcutaneous plane
(b) It may be associated with hyperbilirubinemia
(c) It increases in size in the first 12–24 hours
(d) It can take 3–6 weeks to resolve

**106.** Which of the following sick neonates can be started on 'Minimal Enteral Feeding', if hemodynamically stable?
(a) Septic neonate with sclerema
(b) Neonate with necrotizing enterocolitis (NEC)
(c) Neonate on mechanical ventilation
(d) Symptomatic hypoglycaemia

**107.** Which one of the following drugs is contraindicated in a mother who is breastfeeding her infant?
(a) Bromocriptine
(b) Chlorpromazine
(c) Acyclovir
(d) Morphine

**108.** A term neonate presents with tachypnea on day 1 after birth. The chest X-ray reveals hyperexpanded lung fields, prominent vascular markings, and prominent interlobar fissure. Which of the following is the most probable diagnosis?
(a) Congenital lobar emphysema
(b) Diaphragmatic hernia
(c) Transient tachypnea of the newborn
(d) Tracheoesophageal fistula

**109.** A pre-school boy can go upstairs on alternate feet and has also started copying a circle. How many blocks should he be able to build a tower with, without toppling over?
(a) 5
(b) 7
(c) 9
(d) More than 10

**110.** Which one of the following drugs is the antidote for benzodiazepine poisoning?
(a) Flumazenil
(b) Atropine
(c) Naloxone
(d) Pralidoxime aldoxime methiodide

**111.** A 3-year old child develops severe respiratory distress after inhalation of fumes arising from burning plastic. The child is started on supportive ventilation. Which one of the following antidotes needs to be given?
(a) Hydroxocobalamin
(b) Amylinitrate
(c) Sodium nitrite
(d) N-acetyl cysteine

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**112.** A child has an incurving of the little finger. What is this condition known as?
(a) Camptodactyly
(b) Brachydactyly
(c) Partial cutaneous syndactyly
(d) Clinodactyly

**52.** Sickle cell disease may be associated with any of the following EXCEPT:
(a) Acute chest syndrome
(b) Aplastic crisis
(c) Splenic sequestration crisis
(d) Conn's syndrome

**53.** Fever with splenomegaly and lymphadenopathy can be seen in
(a) Infectious mononucleosis
(b) Chronic leukaemia
(c) Both infectious mononucleosis and chronic leukaemia
(d) Neither infectious mononucleosis nor chronic leukaemia

**54.** Every individual carries four alpha gene alleles. Deletion of three alleles leads to development of:
(a) Haemoglobin X disease
(b) Haemoglobin H disease
(c) Haemoglobin F disease
(d) Hydrops fetalis

**55.** Which one of the following is NOT true regarding Chronic Myeloid Leukaemia (CML)?
(a) It is a clonal malignancy of haematopoetic stem
(b) Risk of developing CML is increased in monozygotic turns
(c) CML is defined by presence of BCR-ABL 1 fusion gene
(d) 10 year survival with TKI therapy is 85%

**56.** Diagnostic criteria of multiple myeloma includes which of the following?
1. Increased malignant plasma cells in the bone marrow
2. Serum and/or urinary M protein
3. Skeletal lytic lesions
4. Skeletal blastic lesions

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 3 and 4
(c) 1, 2 and 4
(d) 2, 3 and 4

**57.** The most predominant type of serum immunoglobulin involved in patients with plasma cell disorder is:
(a) Ig G
(b) Ig A
(c) Ig D
(d) Light chains

**58.** Which one of the following statements is NOT true regarding the thyroid function/disorder in pregnancy?
(a) There is an increase in the metabolism of thyroxine by placenta
(b) Hyperemesis gravidarum may be associated with thyrotoxicosis in pregnancy
(c) Levothyroxine replacement therapy dose should be decreased by 30–50% early in pregnancy
(d) Impaired cognitive impairment may be seen in the offspring of mother with subclinical hypothyroidism

**59.** Which one of the following is NOT the criterion for the diagnosis of Diabetes mellitus?
(a) Symptoms of diabetes and random plasma sugar concentration $\geq$ 200 mg/dL
(b) HbA1c $\geq$ 6.5 %
(c) 2-hours plasma glucose $\geq$ 200 mg/dL during an oral glucose tolerance test
(d) Fasting plasma glucose $\geq$ 110 mg/dL

**60.** A young lady presents in outdoor clinic with complaints of menstrual irregularity, weight gain, hair loss, tiredness and weakness. What will be the investigation of choice?
(a) FSH & LH level
(b) Estrogen level
(c) Free T3 and free T4 level
(d) Free T4 and TSH level

**61.** Consider the following statements about erectile dysfunction in diabetic males:
1. It affects 60 % of males
2. Its common cause is an underlying neuro-vascular pathology
3. It may be aggravated by beta-adrenergic agonist drugs
4. Endocrine disorders like

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hyperprolactinemia may cause it

Which of the statements given above are true?

(a) 1 and 2
(b) 2 and 3
(c) 2 and 4
(d) 3 and 4

**62.** All of the following can cause Hyperprolactinemia, EXCEPT:

(a) Craniopharyngioma
(b) Hyperthyroidism
(c) Stress
(d) Chronic renal failure

**63.** All of the following can be seen in a case of thyrotoxicosis, EXCEPT:

(a) Atrial fibrillation
(b) Periodic paralysis
(c) Deafness
(d) Osteoporosis

**64.** Which one of the following hormones acts via the receptor tyrosine kinase?

(a) FSH
(b) TSH
(c) IGF-1
(d) PTH

**65.** Consider the following disorders as constituent of Multiple Endocrine Neoplasia Type 2a (MEN 2a):

1. Primary Hyperparathyroidism
2. Pituitary tumours
3. Medullary carcinoma of thyroid
4. Pheochromocytoma

Which of the above are correct?:

(a) 1, 2 and 4
(b) 1, 2 and 3
(c) 1, 3 and 4
(d) 2, 3 and 4

**66.** Consider the following statements with regard to Graves' ophthalmopathy:

1. Proptosis is often asymmetric and can even appear to be unilateral
2. It is a clinical diagnosis
3. Worsening of symptoms upon glucocorticoid withdrawal is common
4. Radiation therapy is very effective in treatment

Which of the above statements are correct?

(a) 1 and 2 only
(b) 1, 2 and 3
(c) 2, 3 and 4
(d) 1 and 4 only

**67.** All of the following are common aetiologies of delirium EXCEPT:

(a) Hyperthyroidism
(b) Hypothyroidism
(c) Hyperparathyroidism
(d) Hypoparathyroidism

**68.** Key anthropometric measurements important for evaluating the degree of obesity are:

(a) Weight, height and waist circumference
(b) Weight, height and hip circumference
(c) Weight, height and mid-thigh circumference
(d) Weight, height and chest circumference

**69.** What is the minimum BMI (Body Mass Index) recommended for considering adjuvant pharmacologic treatment in obesity with comorbidity?

(a) 23 $kg/m^2$
(b) 25 $kg/m^2$
(c) 27 $kg/m^2$
(d) 30 $kg/m^2$

**70.** A young medical student while working in HIV ward got pricked accidentally on the finger by a syringe needle which was used to draw blood from a patient. Patient's infection status is not known. Which one of the following therapeutic interventions will be the best interest of this student?

(a) To start Dolutegravir immediately
(b) To wash wound with soap and water and start Emtricitabine
(c) To give Dolutegravir + Tenofovir + Emtricitabine
(d) To give Dolutegravir + Tenofovir + Emtricitabine + HBV Immunoglobulin

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71. Cryptococcal infection is acquired through:
(a) Inhalation route
(b) Bite of Culex mosquito
(c) Direct skin contact
(d) Ingestion of spores

72. Which one of the following is NOT appropriate treatment for _Echinococcus granulosus_ and hydatid disease?
(a) Albendazole 400 mg twice in a day for 3 months
(b) Diethylcarbamazine 2 mg/kg thrice in a day for 12 days
(c) PAIR (percutaneous puncture, aspiration, injection of scolicide, reaspiration)
(d) Praziquantel (20 mg/kg twice daily for 14 days)

73. Which one of the following infections is NOT amenable to post-exposure prophylaxis with specific immunoglobulins?
(a) Hepatitis B
(b) HIV
(c) Tetanus
(d) Rabies

74. Echinocandins are a class of:
(a) Antiviral agents
(b) Antiparasitic agents
(c) Antitubercular agents
(d) Antifungal agents

75. Recommended first time drug for initial treatment of tuberculosis include all EXCEPT:
(a) Isoniazid
(b) Rifampin
(c) Ethambutol
(d) Ethionamide

76. The most frequent adverse reaction of significance among people treated for drug-susceptible tuberculosis is:
(a) Colitis
(b) Hepatitis
(c) Cystitis
(d) Enteritis

77. All adult patients in whom anti-tubercular treatment is being started should undergo baseline assessment of:
(a) Complete blood count
(b) Liver function test
(c) Lipid profile
(d) Pulmonary function test

78. A 30 year old male presents with fever, headache, anorexia, nausea, vomiting and diarrhoea. On examination tongue is coated with abdominal tenderness, soft splenomegaly, relative bradycardia and rose spots rash. The most likely diagnosis is:
(a) Malaria fever
(b) Enteric fever
(c) Leptospirosis
(d) Dengue fever

79. The extrapulmonary sites most commonly involved in tuberculosis are all EXCEPT:
(a) Lymph node TB
(b) Genitourinary TB
(c) Skeletal TB
(d) Skull TB

80. Which of the following is NOT a clinical feature of Botulism?
(a) Impaired alertness
(b) Dysphagia
(c) Diplopia
(d) Ptosis

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81. Post exposure prophylaxis (PEP) for HIV should contain:
(a) 2 antiretroviral drugs administered for 4 weeks
(b) 2 antiretroviral drugs administered for 6 weeks
(c) 3 antiretroviral drugs administered for 4 weeks
(d) 3 antiretroviral drugs administered for 6 weeks

82. Paralytic rabies is characterized by:
(a) Maculopapular rash
(b) Flaccid muscle weakness

(b) Left 6th nerve palsy
(c) Right 4th nerve palsy
(d) Right 3rd nerve palsy

**43.** All of the following are features of Cauda Equina syndrome EXCEPT:
(a) Low back pain
(b) Lower limb areflexia
(c) Loss of bladder function
(d) Extensor plantar response

**44.** A 68-year old male presented in OPD with complaints of progressive small handwriting. On examination, he had resting tremor, bradykinesia, rigidity and postural instability. This patient is suffering most likely from:
(a) Parkinson's disease
(b) Vascular dementia
(c) Alzheimer's disease
(d) Frunto temporal dementia

**45.** An elderly patient presents with abnormal gait. He has a wide base freezing gait with imbalance, comprising short strides, shuffling along the floor and difficulty with starts and turns. Heel-Shin test is normal. Which one of the following is most likely disorder?
(a) Cerebellar ataxia
(b) Sensory ataxia
(c) Frontal gait disorder
(d) Parkinson's disease

**46.** Cushing reflex, seen in conditions of raised intra cranial pressure includes all of the following EXCEPT:
(a) Bradycardia
(b) Hypertension
(c) Irregular respiration
(d) Hypothermia

**47.** A 35 year old man presents with history of low grade fever and headache for last five weeks. Clinical examination is remarkable for signs of meningismus. He undergoes lumbar puncture (LP) and a day later reports worsening of headache. Which one of the following features is NOT consistent with diagnosis of 'Post-LP' headache?
(a) Post-LP headache usually begins within 48 hours
(b) Post-LP headache worsens in sitting position
(c) Post-LP headache is most severe upon waking up
(d) Post-LP headache may improve with caffeine intake

**48.** Which one of the following investigations is NOT appropriate in a case of recurrent thrombosis?
(a) Antiphospholipid antibodies
(b) Bcr-Abl assay
(c) Protein C and S assays
(d) Antithrombin level

**49.** All of the following are causes of reactive thrombocytosis, EXCEPT:
(a) Hemolytic anemia
(b) Megaloblastic anemia
(c) Post splenectomy
(d) Chronic inflammatory disorders

**50.** Cryoprecipitate cannot be used for treatment of which one of the following conditions?
(a) Von Willebrand disease
(b) Hypofibrinogenemia
(c) Hemophilia–B
(d) Hemphilia–A

**51.** Pyruvate kinase deficiency results in deficiency of ATP production and a chronic haemolytic anaemia. The disorder is inherited as an:
(a) Autosomal recessive trait
(b) X-linked recessive trait
(c) Autosomal dominant trait
(d) X-linked dominant trait

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(d) Oliguria

**93.** Which one of the following is most appropriate to describe classic heat stroke?
(a) Patients core body temperature rises above 44°C with headache, nausea and loss of consciousness
(b) Patients core body temperature rises above 40°C with muscle tremors, confusion, loss of consciousness and loss of sweating
(c) Patients core body temperature rises above 38°C with increased sweating, tachypnoea, tachycardia and loss of consciousness
(d) Patients core body temperature is above 40°C with disorientation, increased sweating, peripheral vasodilation, tachycardia and loss of consciousness

**94.** Which of the following is NOT a priority in the initial management of shock from venomous snake?
(a) Aggressive volume resuscitation
(b) Vasopressor support
(c) Anti-venom administration
(d) All of these are undertaken simultaneously

**95.** Which one of the following is NOT an appropriate criterion for diagnosis of Systemic Inflammatory Response Syndrome (SIRS)?
(a) Respiratory rate 20/min
(b) Heart rate 90/min
(c) Total leucocyte count $16 \times 10^9$ per Litre
(d) Temperature 38 °C

**96.** All of the following predispose to Acute Respiratory Distress Syndrome EXCEPT:
(a) Acute Pancreatitis
(b) Toxic gas inhalation
(c) Aspiration of gastric contents
(d) Severe Bronchial asthma

**97.** An 8 year old child has consumed a few tablets of a drug that were being taken by his mother on a regular basis. Following this the child develops gastric necrosis, acidosis, shock and hepatic necrosis. Which is the most likely drug?
(a) Multivitamins
(b) Calcium carbonate
(c) Folic acid
(d) Iron

**98.** A newborn weighing 1.5 kg at birth presents at 6 hours of age with lethargy, weak and high pitched cry and difficulty in feeding. What is the next step in management?
(a) Estimation of blood sugar
(b) Estimation of serum calcium
(c) Supplementary oxygen
(d) Bedside electrocardiogram

**99.** In a child with acute organophosphorus poisoning, which one of the following drugs will act as anti-sialogogue and peripheral parasympatholytic agent?
(a) Carbamates
(b) Atropine
(c) Benzodiazepine
(d) Pralidoxime

**100.** A 6-year old child needs to undergo a central Catheter placement for total parenteral nutrition. The procedure is likely to evoke pain and anxiety. Which of the following is the most appropriate drug for sedation and analgesia in this child?
(a) Chloral hydrate
(b) Midazolam
(c) Propofol
(d) Ketamine

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**101.** Which one of the following is the drug of choice in a child presenting with supraventricular tachycardia?
(a) Atropine
(b) Lidocaine
(c) Adenosine
(d) Nalaxone

**102.** Which one of the following drugs is used in cardiopulmonary resuscitation for pulseless ventricular fibrillation?
(a) Atropine
(b) Adenosine
(c) Lidocaine

(c) Spastic muscle weakness
(d) Hyperexcitability and facial weakness

**83.** All of the following are seen in Marasmus EXCEPT:
(a) Reduced triceps skinfold
(b) Reduced mid arm circumference
(c) Protein wasting
(d) Decreased body mass index

**84.** A 20 year young lady presents with high grade fever for five days and palpable purpura over extremities. She is found to be confused, with presence of neck stiffness. Which of the following is the most likely diagnosis?
(a) Disseminated intravascular coagulation
(b) Acute meningococcaemia
(c) Antiphospholipid antibody syndrome
(d) Thrombotic thrombocytopenic purpura

**85.** Fibroblast Growth Factor 23 (FGF 23) is increased in which one of the following conditions?
(a) Osteomalacia
(b) Osteoporosis
(c) Paget's disease
(d) Renal Osteodystrophy

**86.** Which of the following crystals are deposited in a case of pseudogout?
(a) Monosodium urate
(b) Calcium phosphate
(c) Cholestrol crystals
(d) Calcium pyrophosphate dehydrate (CPPD)

**87.** Which of the following features are associated with poor prognosis in Diffuse Cutaneous Systemic Sclerosis (Scleroderma)?
1. Older age
2. A high gas transfer factor for carbon monoxide (TLCO)
3. Proteinuria
4. Diffuse skin disease

Select the correct answer using the code given below:
(a) 1, 2 and 4
(b) 3 and 4 only
(c) 1, 3 and 4
(d) 1, 2 and 3

**88.** Which of the following statements regarding pegloticase are correct?
1. It is enzyme conjugate
2. It is useful in chronic Gout management
3. The main adverse effects are infusion reactions and development of antibodies

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**89.** The most common cause of sensorineural hearing loss in adults is:
(a) Otosclerosis
(b) Meniere's disease
(c) Presbycusis
(d) Meningitis

**90.** A 50-year old male presents with dizziness. Which one of the following clinical findings does NOT favour a central cause?
(a) Poor saccades
(b) Gaze evoked nystagmus
(c) Inhibition by visual fixation
(d) Presence of diplopia, dysarthria

**91.** A young primigravida with 11 weeks pregnancy presents with sudden onset pain and swelling of left lower limb. Homan's sign is positive. Duplex ultrasonogram shows non-compressibility of veins in the affected region, with absent flow. The drug of choice for treatment is:
(a) Enoxaparin
(b) Amoxicillin–Clavulanic acid
(c) Warfarin
(d) Limb elevation only

**92.** All of the following are clinical features of hypovolaemic shock EXCEPT:
(a) Cold clammy skin
(b) Bradycardia
(c) Hypotension

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**113.** A 4-week old infant presents with repeated episodes of non-bilious vomiting since 7 days. The infant seems active and hungry after the vomiting. Examination reveals an olive-shaped mass in the epigastrium. Which metabolic abnormality is expected in this infant?
(a) Hyperchloremia
(b) Metabolic alkalosis
(c) Hyperkalemia
(d) Hyponatramia

**114.** Which one of the following is the correct dose and route of administration of hepatitis B vaccine in children?
(a) 0.5 mL dose with 10 microgram of antigen subcutaneously
(b) 0.5 mL dose with 10 microgram of antigen intramuscularly
(c) 1 mL dose with 5 microgram of antigen subcutaneously
(d) 1 mL dose with 5 microgram of antigen intramuscularly

**115.** Which one of the following statements is correct for approved acellular pertussis vaccine?
(a) It contains at least 3 IU of inactivated pertussis toxin
(b) It contains at least 3 pathogenic pertussis antigens
(c) Its efficacy is superior to the whole cell pertussis vaccine
(d) Presence of nonfimbrial protein is a mandatory component

**116.** Which of the following is recommended in the follow up health visits of a child with Down syndrome?
(a) Growth assessment twice a year in the first year and annually till 5 years
(b) Annual auditory screening from 1 to 5 years
(c) Screening for refractory error if visual impairment is suspected
(d) Annual thyroid function test from birth to 2 years

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**117.** A 12 year old child presents with delayed puberty and delayed bone age. His growth records reveal that he was growing normally till 1 year of age, after which both his height and weight fell to below the third centile for age. Subsequently, he continued to grow below the third centile with normal height velocity. What is the most likely diagnosis?
(a) Familial short stature
(b) Constitutional growth delay
(c) Growth hormone deficiency
(d) Skeletal dysplasia

**118.** According to the 'Integrated Management of Neonatal and Childhood Illnesses' (IMNCI) classification of young infants up to 2 months, which one of the following signs is NOT included in 'Possible Serious Bacterial Infection'?
(a) Fast breathing (50 breaths or more per minute)
(b) Severe chest indrawing
(c) Axillary temperature less than 36.5 °C
(d) Movement only when stimulated or no movement at all

**119.** Neonatal tetanus elimination in India is defined as less than one case per:
(a) 100 live births per year
(b) 1000 live births per year
(c) 10000 live births per year
(d) 100000 live births per year

**120.** Which one of the following facilities has been established at district hospitals in India to strengthen the care of low birth weight babies and sick newborns?
(a) Special Newborn Care Units (SNCU)
(b) Newborn Treatment Units (NTU)
(c) Newborn Stabilization Units (NSU)
(d) Shishu Suraksha Units (SSU)

END

# PAPER 2020 ANSWERS

1. (d) Atrial fibrillation

An episode of atrial fibrillation precipitated by an alcohol binge is classically referred to as "holiday heart syndrome." Alcohol intake, especially in excessive amounts, can irritate the atria and disrupt normal electrical conduction, leading to atrial fibrillation. Other arrhythmias are possible, but atrial fibrillation is particularly characteristic in the setting of acute alcohol excess.

2. (d) Atorvastatin

Among these medications, statins (e.g., Atorvastatin) are well known to cause myalgia or muscle pain, and in some cases more serious myopathies like rhabdomyolysis. In a patient with diabetes and coronary artery disease, a statin is commonly prescribed for dyslipidemia and cardiovascular risk reduction. Muscle pain is not a typical adverse effect of aspirin, glimepiride, or enalapril, so Atorvastatin is the most likely culprit.

3. (c) Marfan's syndrome

Marfan's syndrome is associated with a tall, thin habitus, arachnodactyly (long "spider-like" fingers), scoliosis, high-arched palate, and joint hypermobility. Cardiovascular manifestations often include mitral valve prolapse or regurgitation, which can produce a pansystolic murmur. Spontaneous pneumothorax can occur due to the presence of apical blebs in the lungs. These combined features align well with Marfan's syndrome and do not match the typical presentations of Takayasu's arteritis, Raynaud's syndrome, or classic rheumatic heart disease.

4. (d) To evaluate the treatment efficacy of antianginal drugs

Exercise stress testing (treadmill testing) is indicated to diagnose ischemic heart disease, especially in patients with suspected stable angina, and to stratify risk in those with known coronary artery disease. It is also used after revascularization to assess prognosis or the success of the procedure. However, using it routinely to evaluate the "efficacy of antianginal drugs" is not a standard indication, making option (d) the correct "EXCEPT" answer here.

5. (a) Massive Pulmonary Embolism

Kussmaul's sign refers to a paradoxical rise in jugular venous pressure (JVP) on inspiration. It is commonly observed in conditions involving impaired right ventricular filling, such as restrictive cardiomyopathy, constrictive pericarditis, and right ventricular infarction. Although acute right-sided strain occurs in massive pulmonary embolism, it does not typically produce a classic Kussmaul's sign. Thus, among the listed options, massive pulmonary embolism is the condition least associated with this finding.

6. (b) Hypothyroidism

Atrial fibrillation is commonly associated with hyperthyroidism (overactive thyroid), various valvular diseases (especially mitral stenosis/regurgitation), hypertension, and acute myocardial infarction. In contrast, hypothyroidism (an underactive thyroid) does not typically precipitate atrial fibrillation. Indeed, hypothyroidism often slows the heart rate (bradycardia) rather than causing this arrhythmia. Therefore, among the options given, hypothyroidism is the one that is not a usual cause of AF.

7. (a) Atrial depolarisation

In a standard electrocardiogram, the P wave reflects the depolarization of both atria before they contract. The QRS complex corresponds to ventricular depolarization, and the T wave represents ventricular repolarization. Atrial repolarization, though it does occur, is typically masked by the larger QRS complex and is not separately visible on a standard ECG trace.

8. (d) Injection Adenosine

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Ventricular tachycardia (VT) management frequently includes electrical cardioversion (DC shock) if hemodynamically unstable, and antiarrhythmic drugs such as lignocaine (class IB) or amiodarone (class III). Adenosine is generally reserved for diagnosing or terminating supraventricular tachycardias (e.g., AV nodal re-entrant tachycardia). It has little role in true VT, making it the incorrect choice for treating ventricular tachycardia.

**9.** (c) Aliskiren

Aliskiren is the first-in-class direct renin inhibitor that specifically blocks the activity of renin, thereby reducing the conversion of angiotensinogen to angiotensin I. Azilsartan and Lisinopril act on downstream components of the renin-angiotensin-aldosterone system (angiotensin II receptor blocker and ACE inhibitor, respectively), while Benedipine is a calcium channel blocker.

**10.** (d) Aortic stenosis

A wide pulse pressure (large difference between systolic and diastolic pressures) is characteristically seen in conditions such as aortic regurgitation, thyrotoxicosis (due to hyperdynamic circulation), and patent ductus arteriosus. Aortic stenosis, on the other hand, often leads to a narrow pulse pressure because the left ventricle ejects blood through a significantly stenosed aortic valve, limiting the rise in systolic pressure and thereby reducing pulse pressure.

**11.** (a) Bronchiectasis

The "signet-ring" sign on a chest CT refers to a bronchus (the "ring") that is abnormally dilated and appears larger than its accompanying pulmonary artery (the "signet"), indicative of bronchiectasis. In normal anatomy, the bronchus is usually smaller than or equal to the size of the accompanying artery. This finding helps distinguish bronchiectasis from other lung pathologies.

**12.** (c) Severe persistent

According to stepwise therapy guidelines for asthma, long-term oral corticosteroids are typically reserved for patients with severe persistent asthma who do not achieve adequate control on high-dose inhaled corticosteroids plus additional controllers. Mild or moderate persistent asthma is usually managed with inhaled corticosteroids (low- or moderate-dose), inhaled long-acting bronchodilators, and other add-on therapies before escalating to oral steroids.

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**13.** (c) Lung biopsy

This clinical presentation raises suspicion for cystic fibrosis (CF), which can present with pancreatic insufficiency (malabsorption and steatorrhea), bronchiectasis, and diabetes (due to pancreatic involvement). Common diagnostic investigations include sweat chloride testing, 24-hour fecal fat measurement, genetic testing (DNA sequencing of CFTR), and imaging (CT-chest). A lung biopsy is not part of the routine diagnostic work-up for CF.

**14.** (b) Actinomycetes

Farmer's lung is a type of hypersensitivity pneumonitis caused by inhaling thermophilic actinomycetes (often from moldy hay). The organisms most frequently implicated belong to the family of actinomycetes (e.g., Micropolyspora faeni). Prolonged exposure leads to an immune-mediated inflammatory response in the lungs. Penicillium, Aspergillus, and Candida can cause other respiratory problems but are not classically linked to Farmer's lung.

**15.** (b) Rifampicin resistance

GeneXpert MTB/RIF is a rapid molecular test that identifies Mycobacterium tuberculosis DNA and simultaneously detects resistance to rifampicin by probing the rpoB gene. While it helps rapidly diagnose TB and rifampicin resistance, it does not directly test for isoniazid or ethambutol resistance or full multidrug resistance (which generally requires additional testing).

**16.** (b) Severe COPD

Type II respiratory failure (hypercapnic respiratory failure) implies elevated arterial $CO_2$ ($PaCO_2$) with accompanying hypoxemia.

Botulism classically involves a descending, flaccid paralysis with prominent cranial nerve palsies (leading to ptosis, diplopia, dysarthria, dysphagia). However, sensorium is typically preserved, so patients remain alert. "Impaired alertness" is _not_ a hallmark; rather, progressive muscle weakness and autonomic dysfunction dominate.

**81.** (c) 3 antiretroviral drugs administered for 4 weeks

Current guidelines recommend a 3-drug antiretroviral regimen (often an integrase inhibitor plus two NRTIs) for 4 weeks following a high-risk exposure (e.g., needlestick from an HIV-positive source). Two-drug regimens are now considered suboptimal. The standard duration is 28 days (4 weeks).

**82.** (b) Flaccid muscle weakness

Two main forms of rabies are recognized: "furious" (classical) rabies, featuring hyperactivity, hydrophobia, and aerophobia; and "dumb" or paralytic rabies, which primarily manifests as a progressive, flaccid paralysis often starting in the bitten limb. This variant may be more challenging to diagnose. Maculopapular rashes, spastic weakness, or classic hyperexcitability are not typical of paralytic rabies.

**83.** (c) Protein wasting

Marasmus is primarily energy deficiency leading to severe wasting of fat and muscle (including some protein), so options (a), (b), and (d) clearly occur (loss of subcutaneous fat, reduced anthropometric measures, and low BMI). However, in strict textbook contrast to kwashiorkor, "marasmus" is often described as relatively _less severe_ protein loss compared to total caloric deficiency. Many sources emphasize that "protein wasting" (especially with hypoalbuminemia and edema) is more characteristic of kwashiorkor. Thus, (c) is the classical "EXCEPT" in many exam frameworks.

**84.** (b) Acute meningococcaemia

Neisseria meningitidis ("meningococcus") can cause a fulminant septicemia (meningococcemia) with characteristic petechial or purpuric rash, meningitis (neck stiffness), fever, and confusion. DIC or TTP could also present with purpura, but the combination of meningitis (neck stiffness), confusion, and a rapidly spreading purpuric rash is classic for meningococcal sepsis.

**85.** (d) Renal Osteodystrophy

FGF23 is secreted by osteocytes to reduce serum phosphate (by decreasing renal phosphate reabsorption and vitamin D activation). In chronic kidney disease, phosphate tends to accumulate, stimulating FGF23 secretion. Persistently high FGF23 is a hallmark of renal osteodystrophy, part of CKD-mineral and bone disorder. In simple osteomalacia, osteoporosis, or Paget's disease, FGF23 is not typically elevated to the same extent.

**86.** (d) Calcium pyrophosphate dehydrate (CPPD)

Pseudogout is caused by the deposition of calcium pyrophosphate dihydrate (CPPD) crystals in joints. In contrast, gout results from monosodium urate crystals. Calcium phosphate or cholesterol crystals are not the hallmark of pseudogout.

**87.** (c) 1, 3 and 4

Poor prognostic factors in diffuse cutaneous systemic sclerosis include older age at onset, significant renal involvement (e.g. proteinuria, scleroderma renal crisis), and diffuse skin involvement (as opposed to limited). A high DLCO (gas transfer factor) actually suggests better lung function. A low DLCO would be a poor prognostic indicator. Hence, 1, 3, and 4 correlate with worse outcomes.

**88.** (d) 1, 2 and 3

Pegloticase is a PEGylated recombinant uricase enzyme (thus an enzyme conjugate) indicated for chronic refractory gout to help reduce uric acid levels. It can cause infusion reactions and patients may develop antibodies to the therapeutic enzyme, limiting its long-term efficacy. All three statements are correct.

**89.** (c) Presbycusis

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The liver receives approximately three-fourths (about 75–80%) of its blood flow via the portal vein and the remainder (about 20–25%) from the hepatic artery. While the hepatic artery provides oxygen-rich blood, the portal vein carries nutrient-rich blood from the GI tract. This dual supply is crucial to liver function. The most commonly cited ratio is roughly "80% portal vein and 20% hepatic artery."

**25.** (b) IgA nephropathy

Certain immune-complex mediated diseases—such as subacute bacterial endocarditis, lupus nephritis, and cryoglobulinemia—commonly present with low serum complement levels (especially low C3) because of complement consumption by circulating immune complexes. In contrast, IgA nephropathy (Berger's disease) typically has normal complement levels and is driven primarily by IgA immune deposits in the mesangium.

**26.** (c) 1, 2 and 3 only

Aphthous ulcers (canker sores) are typically superficial, painful lesions often triggered by stress or hormonal fluctuations (some women note them just before menses). Severe, recurrent cases can require topical or even oral corticosteroids to reduce inflammation. However, they are not considered pre-malignant lesions. Therefore, statement (4)—that they progress to squamous cell carcinoma—is incorrect, making 1, 2, and 3 the correct statements.

**27.** (c) Normal columnar cells lining the lower oesophagus are replaced by squamous cells

Barrett's esophagus is a well-known complication of chronic GERD in which the normal stratified squamous epithelium of the distal esophagus is replaced by a metaplastic columnar epithelium. This adaptive change is considered pre-malignant, because it predisposes to esophageal adenocarcinoma. The incorrect statement here (option c) reverses the actual process; in Barrett's, the change is to columnar epithelium, not from it.

**28.** (a) Hepatitis E

In many developing countries, including India, Hepatitis E is a major cause of waterborne outbreaks of acute hepatitis. Hepatitis E virus (HEV) often spreads through contaminated water supplies and can cause large epidemics. While Hepatitis A can also spread via the fecal–oral route, on a population scale, Hepatitis E has been documented more frequently in large adult outbreaks in the Indian subcontinent.

**29.** (b) Boerhaave's syndrome

Boerhaave's syndrome is a full-thickness spontaneous rupture of the esophagus, typically occurring after forceful vomiting or retching. It is a surgical emergency, often presenting with severe chest pain, subcutaneous emphysema, and mediastinitis if not recognized promptly. Menetrier's disease, achalasia, and Barrett's esophagus do not typically present with acute spontaneous perforation in this manner.

**30.** (d) Acute glomerulonephritis

H. pylori is implicated in several extra-gastric conditions, including some cases of unexplained vitamin B12 deficiency, iron deficiency anemia (where no obvious GI bleed is found), and immune-mediated platelet destruction (as in idiopathic thrombocytopenic purpura). Eradicating H. pylori can improve or resolve these problems in certain patients. However, acute glomerulonephritis is not routinely linked to H. pylori eradication benefit, making option (d) the correct "EXCEPT."

**31.** (b) 10 to 12 gm/dL

Guidelines recommend partially correcting anemia in CKD to a hemoglobin target around 10–12 g/dL, rather than normalizing it fully, because trials have shown that aiming for higher Hb ($\geq$13 g/dL) in CKD patients can increase the risk of cardiovascular events (e.g., stroke and hypertension). Hence, the safest and most accepted therapeutic target lies in the moderate correction range of 10–12 g/dL.

**32.** (a) Adynamic bone disease

In chronic kidney disease, secondary hyperparathyroidism commonly leads to high-turnover bone disease like osteitis fibrosa cystica.

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Chronic obstructive pulmonary disease (COPD) is the classic cause of chronic type II respiratory failure, due to persistent airway obstruction and air trapping, which impair $CO_2$ elimination. While severe pneumonia or asthma can acutely lead to type II failure, COPD is the most common culprit in the chronic setting.

17. (d) Cough

Cough is extremely common across a wide variety of respiratory conditions—ranging from mild viral infections to chronic diseases like bronchitis, asthma, or lung cancer. While breathlessness (dyspnea) is also frequent, cough tends to be more universally reported in primary care settings because even minor airway irritation triggers it. Chest pain and hemoptysis occur in more specific circumstances and are less common overall.

18. (b) Anti-leukotrienes

In acute severe asthma, immediate bronchodilation is paramount, typically achieved via high-dose inhaled short-acting beta-2 agonists (e.g., Albuterol), oxygen, IV steroids, and sometimes IV magnesium sulfate and/or aminophylline if initial measures fail. Anti-leukotriene drugs (e.g., montelukast) are generally considered add-on therapies in chronic or maintenance asthma management, not standard agents in the emergency treatment of acute severe asthma.

19. (b) 2 and 4

Egophony ("EEE" → "AY") is classically found in consolidation, not interstitial fibrosis, so statement 1 is incorrect. Whispered pectoriloquy (statement 2) is indeed a sign of consolidated lung. Monophonic wheeze (statement 3) typically indicates a single airway obstruction rather than the generalized airflow limitation of asthma (which produces polyphonic wheezes), so statement 3 is not characteristic. A hyper-resonant percussion note (statement 4) is a classic finding in pneumothorax. Thus, only statements 2 and 4 are correct.

20. (d) Meig syndrome

Meig's syndrome (benign ovarian fibroma with ascites and pleural effusion) typically produces a transudative effusion rather than an exudate. By contrast, SVC obstruction (often malignant-related), fungal infections, and inflammatory autoimmune conditions such as SLE commonly cause pleural fluid that meets exudative criteria (Light's criteria). Hence, Meig's syndrome is the "EXCEPT" choice here because its classic teaching is a transudative, not an exudative, effusion.

21. (b) It decreases gastric emptying

Ghrelin is often called the "hunger hormone." It is secreted by the stomach, especially during fasting, and it increases appetite. It also increases gastric motility and acid secretion, facilitating digestion. Its levels rise before meals (fasting) and fall after eating. The statement that "it decreases gastric emptying" is therefore incorrect—ghrelin actually promotes gastric emptying.

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22. (d) Pancreatic dysfunction

Fecal elastase is an enzyme secreted by the pancreas. Measuring its level in stool is a sensitive and specific way to evaluate exocrine pancreatic insufficiency, such as in chronic pancreatitis or cystic fibrosis. Low fecal elastase indicates diminished pancreatic enzyme output. Lactose intolerance, inflammatory bowel conditions, and bile acid problems typically require different diagnostic tests (e.g., lactose hydrogen breath test, colonoscopy/biopsy, or bile acid breath tests).

23. (c) MELD score

The Model for End-Stage Liver Disease (MELD) score is currently used to prioritize patients for liver transplantation. It is calculated using serum bilirubin, INR, and serum creatinine, helping estimate short-term mortality risk. The Child-Pugh score, though historically used, now often serves more for prognosis and clinical staging rather than for transplant listing. APACHE is used primarily in ICU settings (e.g., for critical care severity), and Metavir is used to grade liver fibrosis histologically in hepatitis C.

24. (b) 80 % portal vein and 20 % hepatic artery

(thiamine), or corticosteroids (prednisolone) are not standard first-line therapies for classic trigeminal neuralgia.

**40.** (b) Non dominant parietal lobe

Constructional ability—e.g., copying designs or arranging objects in space—is largely mediated by the non-dominant (usually right) parietal lobe, which integrates visual-spatial information. Lesions here often produce "constructional apraxia," where patients struggle to assemble or draw objects correctly. The temporal lobe focuses on auditory perception/memory (dominant side often for language), whereas frontal lobes guide executive functions and motor planning, not the primary integration of spatial information needed for constructional tasks.

**41.** (d) Parinaud syndrome

Parinaud's syndrome (dorsal midbrain syndrome) typically manifests with an upward gaze palsy and convergence–retraction nystagmus on attempted upgaze. Causes include pineal region tumors, stroke, multiple sclerosis, or hydrocephalus affecting the superior colliculi/pretectal area. Weber, Millard-Gubler, and Claude syndromes are brainstem stroke syndromes that present with other cranial nerve and long tract findings but do not classically cause vertical gaze palsy with convergence–retraction nystagmus.

**42.** (d) Right 3rd nerve palsy

A "down and out" deviation of the eye with a dilated pupil is classic for an oculomotor (third cranial nerve) palsy. CN III innervates most extraocular muscles (except lateral rectus and superior oblique) and also carries parasympathetic fibers to the pupil. When palsy occurs, the eye assumes the unopposed actions of lateral rectus (VI) and superior oblique (IV), pointing "down and out." Pupillary dilation implies involvement of parasympathetic fibers.

**43.** (d) Extensor plantar response

Cauda Equina syndrome results from compression of the lumbosacral nerve roots below the level of the spinal cord termination. This causes lower motor neuron findings such as flaccid paralysis, decreased or absent deep tendon reflexes (areflexia), saddle anesthesia, and bladder/bowel dysfunction. An extensor plantar (Babinski) response is an upper motor neuron sign typically seen with spinal cord (rather than cauda equina) lesions. Hence, it is the one that does not fit Cauda Equina syndrome.

**44.** (a) Parkinson's disease

The hallmark motor features of Parkinson's disease include resting tremor, bradykinesia, rigidity, and postural instability. Micrographia (progressively smaller handwriting) is also a classic symptom. Vascular or frontotemporal dementias involve primarily cognitive/behavioral deficits, whereas Alzheimer's disease presents with progressive memory loss. The combination of these characteristic motor findings and the handwriting changes points toward Parkinson's disease.

**45.** (c) Frontal gait disorder

A wide-based, "magnetic" gait with freezing, short shuffling steps, and difficulty initiating turns—yet normal cerebellar function (heel-shin test)—strongly suggests a frontal gait disorder (sometimes called "gait apraxia"). In Parkinson's disease, the gait is classically shuffling and narrow-based, but not typically wide-based. Cerebellar ataxia or sensory ataxia would usually alter coordination tests (like heel-shin). Frontal gait disorder is often associated with subcortical white matter changes or normal pressure hydrocephalus.

**46.** (d) Hypothermia

Cushing's triad (or reflex) involves three key physiologic responses to increased intracranial pressure: hypertension, bradycardia, and irregular respirations. They represent the body's attempt to maintain cerebral perfusion when ICP rises. Hypothermia is not typically part of this triad (some patients may have altered temperature regulation in severe brain injury, but it is not a hallmark of Cushing's reflex).

**47.** (c) Post-LP headache is most severe upon waking up

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A typical post–lumbar puncture headache often starts within 48 hours of the procedure, worsens on sitting or standing (due to reduced CSF pressure in the upright posture), and improves on lying down or with caffeine. It tends not to be worst upon waking (when the patient has been lying flat); rather, it is less severe after rest and becomes more severe throughout the day if upright. Therefore, (c) is the feature that is NOT consistent.

**48.** (b) Bcr-Abl assay

When evaluating recurrent thrombotic events, one checks for inherited or acquired thrombophilias (e.g., antiphospholipid syndrome, protein C or S deficiency, antithrombin deficiency). Testing for the Bcr-Abl fusion gene (the hallmark of chronic myelogenous leukemia) is not part of routine thrombosis workup. Bcr-Abl testing is indicated if a myeloproliferative disorder or leukemia is suspected. Thus, for standard recurrent clotting episodes, the Bcr-Abl assay is "NOT appropriate."

**49.** (b) Megaloblastic anemia

Reactive (secondary) thrombocytosis occurs in many conditions with increased cytokine or marrow stimulation, including hemolytic anemias, acute blood loss, post-splenectomy states, or chronic inflammation (e.g., rheumatoid arthritis). In megaloblastic anemia (due to B12 or folate deficiency), platelet counts are often normal or can be reduced, but they are not typically elevated in a reactive fashion. Hence, megaloblastic anemia is the exception.

**50.** (c) Hemophilia–B

Cryoprecipitate is rich in fibrinogen, factor VIII, factor XIII, and von Willebrand factor. It can be used in Hemophilia A (factor VIII deficiency), von Willebrand disease (especially older practice), and hypofibrinogenemia. Hemophilia B is a deficiency of factor IX, which is not contained in cryoprecipitate. Instead, patients with Hemophilia B require factor IX concentrates or prothrombin complex concentrates.

**51.** (a) Autosomal recessive trait

Pyruvate kinase deficiency is a cause of chronic non-spherocytic hemolytic anemia, where reduced ATP in red cells leads to shortened RBC lifespan. It is inherited in an autosomal recessive manner, meaning both copies of the gene (usually on chromosome 1) must be mutated. Patients present with hemolysis, jaundice, and splenomegaly, and diagnosis is confirmed by measuring RBC pyruvate kinase activity or genetic testing.

**52.** (d) Conn's syndrome

In sickle cell disease, vaso-occlusive crises can lead to acute chest syndrome (respiratory distress, chest pain, pulmonary infiltrates), aplastic crises (often triggered by parvovirus B19 infection), and splenic sequestration crises (massive pooling of blood in the spleen). Conn's syndrome (primary hyperaldosteronism) is unrelated to sickle cell disease pathophysiology and therefore is not a recognized complication.

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**53.** (c) Both infectious mononucleosis and chronic leukaemia

Infectious mononucleosis (commonly due to Epstein-Barr virus) classically presents with fever, lymphadenopathy, and splenomegaly. Similarly, some chronic leukemias (e.g., chronic lymphocytic leukemia) can also manifest with lymph node enlargement, splenomegaly, and low-grade fever. Therefore, both conditions can feature this triad.

**54.** (b) Haemoglobin H disease

In alpha-thalassemia, humans have four alpha-globin genes (two on each chromosome 16). Deletion of three of these alpha genes results in Hemoglobin H disease, characterized by significant but not fatal hemolytic anemia. Deletion of all four alpha genes causes hydrops fetalis (often incompatible with life). Hemoglobin F is the fetal hemoglobin (two alpha, two gamma chains) and is not specifically the result of three alpha gene deletions.

**55.** (b) Risk of developing CML is increased in monozygotic turns

Chronic Myeloid Leukemia (CML) is indeed a clonal malignancy of hematopoietic stem

cells, defined by the BCR-ABL1 fusion gene (the Philadelphia chromosome). With tyrosine kinase inhibitors (TKIs), long-term survival often exceeds 80–85%. There is no established, marked increase in CML incidence among monozygotic twins, making that claim (option b) the incorrect statement (i.e., it is NOT true).

**56.** (a) 1, 2 and 3

The hallmarks of multiple myeloma include a clonal proliferation of malignant plasma cells in the bone marrow (generally >10%), a monoclonal protein spike in the serum or urine (the M protein), and typically lytic skeletal lesions ("punched-out" lesions on imaging). Blastic (sclerotic) lesions are not characteristic of classic multiple myeloma. Hence, criteria 1, 2, and 3 correctly reflect typical diagnostic factors, making option (a) correct.

**57.** (a) Ig G

Among monoclonal gammopathies like multiple myeloma, IgG is the most commonly produced immunoglobulin subtype, followed by IgA. Light chain–only disease (Bence Jones proteins) also occurs but is not the single most frequent variety. IgD myeloma is rare. Therefore, IgG is the predominant immunoglobulin in plasma cell dyscrasias.

**58.** (c) Levothyroxine replacement therapy dose should be decreased by 30–50% early in pregnancy

Pregnancy actually raises the requirement for thyroxine because of increased thyroid-binding globulin and higher thyroid hormone metabolism. In hypothyroid women, levothyroxine doses generally need a 30–50% increase, not a decrease, to maintain euthyroid status. Hyperemesis can be associated with transient hyperthyroidism, and inadequate maternal thyroid levels may impair fetal neurological development. Therefore, the incorrect (NOT true) statement is that the levothyroxine dose should be decreased.

**59.** (d) Fasting plasma glucose ≥ 110 mg/dL

Diagnostic criteria for diabetes include: a fasting plasma glucose ≥126 mg/dL; a random plasma glucose ≥200 mg/dL with classic symptoms; an OGTT 2-hour value ≥200 mg/dL; or an HbA1c ≥6.5%. While 110 mg/dL is above normal fasting (which should be <100 mg/dL), it is not sufficient for a diabetes diagnosis. The recognized fasting threshold for diagnosing diabetes is 126 mg/dL.

**60.** (d) Free T4 and TSH level

Menstrual irregularities, weight gain, and hair loss are classic symptoms of hypothyroidism. The first-line investigation for suspected thyroid dysfunction is measurement of serum TSH (most sensitive) and, commonly, free T4. Checking TSH plus free T4 clarifies thyroid status more definitively. FSH/LH or estrogen levels would be evaluated if a primary reproductive or ovarian etiology was strongly suspected, but given these classic hypothyroid features, TSH and free T4 is the best initial choice.

**61.** (c) 2 and 4

In diabetes, erectile dysfunction is often due to neuro-vascular damage (statement 2)—microvascular disease and neuropathy are key contributors. Hormonal problems, such as hyperprolactinemia, can also lead to ED (statement 4). While the prevalence of ED in diabetic males is high, stating "it affects 60%" is an approximate figure that can vary. Furthermore, ED is more typically aggravated by beta-blockers or other drugs, not beta-adrenergic agonists (so 3 is incorrect). Thus, statements 2 and 4 are the correct pair.

**62.** (b) Hyperthyroidism

Hyperprolactinemia can arise from hypothyroidism (via elevated TRH), pituitary or stalk lesions (like craniopharyngioma), physical or psychological stress, and chronic renal failure (impaired excretion of prolactin). In contrast, hyperthyroidism does not typically elevate prolactin levels. Indeed, hypothyroidism (not hyperthyroidism) is a well-known endocrine cause of hyperprolactinemia.

**63.** (c) Deafness

Thyrotoxicosis (hyperthyroidism) can lead to atrial fibrillation, thyrotoxic periodic paralysis (particularly in certain ethnic

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groups), and osteoporosis from increased bone turnover. Deafness is not a classical feature of hyperthyroidism. Though hyperthyroidism can cause a wide variety of systemic effects, sensorineural deafness is not typically recognized as part of thyrotoxic manifestations.

**64.** (c) IGF-1

Insulin-like Growth Factor-1 (IGF-1) exerts its effects via a tyrosine kinase receptor, structurally similar to the insulin receptor. FSH and TSH both act through G protein–coupled receptors (adenylate cyclase/cAMP pathway), and PTH likewise uses a Gs-cAMP–mediated mechanism. Hence, IGF-1 is the correct example of a hormone utilizing a receptor tyrosine kinase.

**65.** (c) 1, 3 and 4

MEN 2A classically includes: Medullary carcinoma of the thyroid, Pheochromocytoma, and Primary hyperparathyroidism. Pituitary tumors are associated with MEN 1 (Wermer's syndrome), not MEN 2A. Therefore, the disorders in MEN 2A are 1 (Hyperparathyroidism), 3 (Medullary carcinoma), and 4 (Pheochromocytoma).

**66.** (b) 1, 2 and 3

Graves' ophthalmopathy can appear asymmetric (sometimes almost unilateral) and is largely diagnosed clinically, aided by imaging if necessary. There is also a known tendency for "rebound" or worsening if steroids are tapered too quickly. While orbital radiation may be used in moderate to severe cases, describing it as "very effective" can be somewhat debatable. Thus, statements 1, 2, and 3 are most consistently correct in standard teaching.

**67.** (d) Hypoparathyroidism

Delirium can result from endocrine imbalances such as hyperthyroidism (thyrotoxic encephalopathy), hypothyroidism (myxedema madness), or hyperparathyroidism (hypercalcemia causing confusion). By contrast, hypoparathyroidism leads primarily to hypocalcemia with tetany, muscle cramps, or seizures; it is not commonly linked to an acute confusional state (delirium). Therefore, hypoparathyroidism is the least likely of these choices to cause delirium.

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**68.** (a) Weight, height and waist circumference

Obesity assessment typically involves body mass index (BMI), calculated from weight and height, along with measures of central adiposity such as waist circumference. Waist circumference is a critical marker of visceral fat and is strongly associated with metabolic risk. Hip, thigh, or chest measurements can be useful in some contexts (like waist–hip ratio), but the most widely accepted key measurements for general obesity surveillance are weight, height, and waist circumference.

**69.** (c) 27 $kg/m^2$

Most guidelines recommend pharmacological therapy for patients with BMI $\geq$30 without comorbidity or $\geq$27 if comorbidities (such as diabetes or hypertension) are present. Below this cutoff, lifestyle modifications (diet, exercise, behavior therapy) remain first-line. Thus, the minimum BMI threshold in an obese patient with comorbidities is typically 27 $kg/m^2$ before considering adjunct weight-loss medication.

**70.** (c) To give Dolutegravir + Tenofovir + Emtricitabine

In occupational needlestick exposure with unknown HIV status, post-exposure prophylaxis (PEP) should be started promptly—preferably within 1–2 hours. Current guidelines typically recommend a three-drug regimen, such as an integrase inhibitor (Dolutegravir or Raltegravir) plus two NRTIs (Tenofovir + Emtricitabine) for 28 days. HBV immunoglobulin is not routinely given unless the source is known hepatitis B positive and the exposed person is non-immune. Simply washing and using a single agent is insufficient.

**71.** (a) Inhalation route

Cryptococcus neoformans is a fungus found in soil contaminated with bird droppings (especially pigeons). Infection begins when fungal spores or yeast cells are inhaled into the respiratory tract. After initial pulmonary

infection (often subclinical), it can disseminate hematogenously, commonly affecting the central nervous system (cryptococcal meningitis). It is not typically transmitted by mosquitoes, skin contact, or ingestion.

72. (b) Diethylcarbamazine 2 mg/kg thrice in a day for 12 days

For Echinococcus granulosus (hydatid disease), recommended therapies include prolonged albendazole regimens, sometimes with PAIR (a minimally invasive procedure to remove the cyst contents safely), and in certain protocols _praziquantel_ can be adjunctive. Diethylcarbamazine (DEC), however, is the mainstay for filariasis (e.g., _Wuchereria bancrofti_) and has no role in the treatment of hydatid disease, making it the inappropriate choice.

73. (b) HIV

Specific immunoglobulins (IG) are available for certain exposures to help confer passive immunity—examples include hepatitis B immunoglobulin (HBIG), tetanus immunoglobulin (TIG), and rabies immunoglobulin (RIG). In contrast, no specific immunoglobulin product exists for post-exposure prophylaxis of HIV. Instead, HIV PEP relies on antiretroviral medications rather than immunoglobulins.

74. (d) Antifungal agents

Echinocandins (e.g., caspofungin, micafungin, anidulafungin) are antifungal drugs that inhibit the fungal cell wall by blocking the synthesis of β-(1,3)-D-glucan. They are especially useful against _Candida_ species (including some azole-resistant strains) and have activity against _Aspergillus_ (though usually in combination therapy).

75. (d) Ethionamide

Standard first-line anti-TB therapy (often called "RIPE") consists of Rifampin, Isoniazid, Pyrazinamide, and Ethambutol. Ethionamide is a second-line agent used for drug-resistant TB or when first-line drugs are not tolerated. It is not part of the typical first-line regimen for drug-susceptible cases.

76. (b) Hepatitis

The most notable and significant side effect with standard TB regimens (especially isoniazid, rifampin, and pyrazinamide) is drug-induced hepatotoxicity. Monitoring of liver function tests is often necessary, particularly in patients with risk factors for liver disease. Colitis, cystitis, or enteritis are not as commonly encountered compared to hepatitis in TB pharmacotherapy.

77. (b) Liver function test

Because first-line TB drugs (especially isoniazid, pyrazinamide, and rifampin) can cause hepatotoxicity, guidelines recommend baseline liver function tests in all adult patients. This helps identify pre-existing liver disease and guides monitoring during treatment. While CBC and other tests may be relevant in certain settings, LFTs are routinely mandatory before initiating TB therapy.

78. (b) Enteric fever

Enteric fever (typhoid) due to _Salmonella typhi_ commonly presents with a gradual onset of fever, gastrointestinal symptoms, coated tongue, relative bradycardia, and rose spots on the trunk. Soft splenomegaly and abdominal tenderness also fit this picture. Malaria, leptospirosis, and dengue have overlapping features (fever, headache), but the presence of rose spots, coated tongue, and relative bradycardia strongly suggests enteric fever.

79. (d) Skull TB

Common extrapulmonary sites in TB include lymph nodes (the most frequent form), genitourinary system (kidneys, reproductive organs), skeletal system (particularly the spine—Pott's spine), meninges, and pleura. Skull TB (i.e., cranial bone involvement) is quite rare compared to these more typical locations. Therefore, among the listed options, "Skull TB" is the least commonly involved site.

80. (a) Impaired alertness

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However, when PTH levels are too low (often due to over-suppression by excessive vitamin D analog therapy or other factors), patients can develop adynamic bone disease, characterized by minimal bone remodeling. Tumoral calcinosis and calciphylaxis are typically associated with calcium/phosphate dysregulation (often with high PTH or advanced mineral imbalance).

**33.** (b) It is usually associated with marked proteinuria

Adult polycystic kidney disease (APKD) follows an autosomal dominant pattern and frequently presents with hypertension in early adulthood. Cerebral "berry" aneurysms also have a recognized association. While patients can have mild to moderate proteinuria, they do not typically display the "marked" or nephrotic-range proteinuria seen in primary glomerular diseases. Thus, stating that APKD is "usually associated with marked proteinuria" is an exaggeration/incorrect.

**34.** (d) 1, 2 and 3

Although some references set the oliguria cutoff at <400 mL/day, <300 mL/day is also cited in certain texts. Anuria is commonly defined as a urine output <50 mL/day, indicating virtually no renal excretion. Polyuria generally refers to urine output >3 L/day. Thus, as stated, all three definitions (1, 2, and 3) can be considered accurate for an adult patient, making option (d) correct.

**35.** (b) Pyelonephritis

Urinary casts form in the distal convoluted tubule or collecting duct and reflect the cellular elements within the tubules. White blood cell casts typically indicate infection or inflammation originating in the kidney itself—most classically seen in acute pyelonephritis. RBC casts point toward glomerulonephritis, whereas broad waxy casts occur in chronic renal failure. Renal stones or papillitis may cause hematuria or flank pain, but they do not typically produce WBC casts.

**36.** (d) Immunosuppressants are to be used for crescentic glomerulonephritis

This presentation is classic for acute post-streptococcal glomerulonephritis (APSGN): low C3, recent strep infection, raised ASO/antiDNase. Usually, the diagnosis is made clinically and by labs, so a renal biopsy is rarely needed. Active infection can be treated with antibiotics, and management is primarily supportive (monitor fluid overload, BP, etc.). Routine immunosuppression is generally not used for typical APSGN; even if there are some crescents, most cases still resolve with supportive care.

**37.** (a) Higher dietary calcium increases risk

Moderate dietary calcium actually lowers the risk of kidney stones by binding dietary oxalate in the gut. Extremely high calcium supplementation may be problematic, but normal to moderately higher dietary calcium intake is not typically considered a direct risk factor. High animal protein (increasing uric acid/calcium excretion), low urinary citrate, and low potassium intake all predispose to stone formation. Therefore, the statement that "higher dietary calcium increases risk" is the one that is NOT correct.

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**38.** (d) Viral encephalitis

Seizures, focal neurologic deficits (aphasia), and altered sensorium—together with fever—suggest encephalitis (parenchymal inflammation), rather than meningitis. In viral (particularly herpes simplex) encephalitis, CSF findings can sometimes be only mildly abnormal or initially near-normal. Bacterial, tubercular meningitis, or multiple sclerosis would usually show more definitive CSF changes. The acute onset of fever, headache, and seizures with unremarkable CSF strongly points to viral encephalitis, often requiring further investigations such as MRI or PCR for confirmation.

**39.** (a) Carbamazepine

Trigeminal neuralgia involves severe, recurrent facial pain in the distribution of the trigeminal nerve. Carbamazepine is the first-line therapy and can provide substantial relief by stabilizing overactive neuronal sodium channels. Other anticonvulsants (e.g., oxcarbazepine) are alternatives. NSAIDs like aceclofenac, vitamins

Presbycusis, the age-related degeneration of the cochlea or associated structures, is the single most common cause of sensorineural hearing loss in adults. Otosclerosis often causes conductive or mixed hearing loss, Meniere's disease is less common overall, and meningitis can lead to hearing loss but is not the most frequent cause in the general adult population.

**90.** (c) Inhibition by visual fixation

In peripheral vestibular causes of vertigo (e.g., benign positional vertigo, labyrinthitis), nystagmus typically diminishes or is inhibited when the patient fixes vision on a target. In central lesions (e.g., brainstem or cerebellar pathology), nystagmus often persists or even worsens despite visual fixation, and there may be other neurological findings like poor saccades, diplopia, or dysarthria. Therefore, "inhibition by visual fixation" points to a peripheral (not central) origin.

**91.** (a) Enoxaparin

In pregnancy, low-molecular-weight heparin (LMWH) such as enoxaparin is the anticoagulant of choice for deep vein thrombosis (DVT). Warfarin is contraindicated in early pregnancy because of teratogenic risks (especially in the first trimester). Antibiotics (like amoxicillin–clavulanic acid) have no role in an uncomplicated DVT. Limb elevation alone is not sufficient treatment. Enoxaparin effectively anticoagulates without crossing the placenta, making it safer for the fetus.

**92.** (b) Bradycardia

Hypovolemic shock typically induces sympathetic overdrive, leading to tachycardia, hypotension, cold/clammy skin (due to peripheral vasoconstriction), and reduced urine output (oliguria). Bradycardia is unusual in this setting; instead, a rapid heart rate is a compensatory mechanism for decreased intravascular volume. Hence, (b) bradycardia is the exception.

**93.** (b) Patients core body temperature rises above 40°C with muscle tremors, confusion, loss of consciousness and loss of sweating

Classic (non-exertional) heat stroke generally presents with core temperature often 40°C, central nervous system dysfunction (confusion, altered consciousness), and anhidrosis (loss of sweating). Muscular involvement (tremors or rigidity) can also be present. Although (d) mentions a temperature above 40°C and altered mental state, it incorrectly states "increased sweating," whereas classic heat stroke typically features a failure of sweating mechanisms.

**94.** (b) Vasopressor support

In venomous snakebite with shock, the initial priorities usually include ensuring a patent airway, giving aggressive fluid resuscitation (to correct hypovolemia), and prompt anti-venom administration if indicated. Vasopressors are occasionally needed if hypotension fails to respond to fluids, but they are not part of the immediate first-line priorities. Therefore, among the listed options, vasopressor support (b) is the one that is not automatically a priority at the very start.

**95.** (c) Total leucocyte count $16 \times 10^9$ per Litre

Classical SIRS criteria include:

1. Temperature 38°C or < 36°C
2. Heart rate 90/min
3. Respiratory rate 20/min or $PaCO_2 < 32$ mm Hg
4. WBC 12,000 cells/μL, < 4,000 cells/μL, or 10% bands

A cutoff of ">$16 \times 10^9$/L" is not part of the standard definition; the usual threshold is >$12 \times 10^9$/L. Hence, (c) is the "NOT appropriate" criterion among these choices.

**96.** (d) Severe Bronchial asthma

ARDS can be triggered by direct or indirect lung injuries—common causes include sepsis, pneumonia, aspiration of gastric contents, toxic inhalation, major trauma, burns, and acute pancreatitis (due to inflammatory mediators). Severe bronchial asthma, while life-threatening, usually does not cause the widespread alveolar-capillary damage and diffuse alveolar injury characteristic of ARDS.

**97.** (d) Iron

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**113.** (b) Metabolic alkalosis

A classic description of infantile hypertrophic pyloric stenosis includes projectile, non-bilious vomiting, an "olive-shaped" palpable mass in the epigastrium, and persistent hunger after emesis. The vomiting of gastric contents leads to loss of acid (hydrochloric acid), generating a hypochloremic, hypokalemic metabolic alkalosis. The blood gas typically shows elevated bicarbonate and alkalosis, consistent with chronic gastric acid losses.

**114.** (b) 0.5 mL dose with 10 microgram of antigen intramuscularly

For routine childhood immunization, the pediatric hepatitis B vaccine is administered intramuscularly (usually in the anterolateral thigh in infants), in a 0.5 mL dose containing 10 μg of hepatitis B surface antigen. Administration subcutaneously is not the standard recommendation for hepatitis B immunization, and adult formulations differ in volume and antigen content (often 1.0 mL containing 20 μg).

**115.** (b) It contains at least 3 pathogenic pertussis antigens

Acellular pertussis vaccines (e.g., DTaP) typically include purified components of _ Bordetella pertussis_ such as pertussis toxin (PT), filamentous hemagglutinin (FHA), pertactin, and possibly fimbrial antigens—at least three of these are included for adequate immunogenicity. While acellular vaccines generally have fewer side effects, their efficacy is comparable (or slightly lower in some studies) than whole-cell vaccines—not definitively "superior." Non-fimbrial protein is not always mandatory, but PT, FHA, and possibly others are standard.

**116.** (d) Annual thyroid function test from birth to 2 years

Children with Down syndrome are at high risk of hypothyroidism. Many guidelines recommend regular thyroid function tests starting at birth or soon after, then every 6–12 months in early childhood to detect and treat hypothyroidism promptly. Hearing screenings, vision assessments, and growth monitoring are also important, but a specifically annual TSH check up to at least 2 years (and often beyond) is widely advised.

**117.** (b) Constitutional growth delay

Constitutional growth delay (CGD) is characterized by a slower early growth pattern with delayed bone age and delayed puberty, but a normal (albeit late) growth spurt that eventually helps them catch up. They often show normal growth velocity while tracking below the standard percentiles. Familial short stature usually has a normal bone age with a consistent, low percentile tracking that reflects parental genetics. Growth hormone deficiency more severely impairs growth velocity.

**118.** (a) Fast breathing (50 breaths or more per minute)

Under IMNCI guidelines, an infant up to 2 months is classified with "possible serious bacterial infection" if there is fast breathing of 60 breaths/min or more, severe chest indrawing, temperature instability (<35.5°C or >37.5°C), or lethargic movement. A threshold of 50 breaths/min is used in older infants (2–12 months) for pneumonia. Hence, 50 breaths/min does not meet the "fast breathing" cutoff for a young infant under 2 months, making option (a) incorrect for that age bracket.

**119.** (b) 1000 live births per year

The World Health Organization and national programs define neonatal tetanus elimination as an incidence of less than 1 case per 1000 live births per year in every district. Achieving and sustaining this rate reflect effective maternal vaccination against tetanus, clean delivery practices, and proper newborn cord care. Higher thresholds (1 in 10,000, etc.) would indicate a stricter standard, but officially, the recognized benchmark for "elimination" is under 1 per 1000 live births.

**120.** (a) Special Newborn Care Units (SNCU)

Under India's National Health Mission, Special Newborn Care Units (SNCUs) are established in district hospitals to provide dedicated care for low birth weight and sick neonates

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A cephalhematoma is a subperiosteal (not subcutaneous) hemorrhage confined by suture lines, most commonly over the parietal bones. It often increases in size over the first 1–2 days, can predispose to hyperbilirubinemia (as the collected blood breaks down), and usually resolves over several weeks. The key error here is describing it as "subcutaneous," whereas it is specifically beneath the periosteum.

**106.** (c) Neonate on mechanical ventilation

Minimal Enteral Nutrition (MEN), or "trophic feeding," involves giving very small volumes of milk to stimulate gut development without risking feeding intolerance or NEC. A hemodynamically stable neonate on mechanical ventilation can typically tolerate these small feeds. In contrast, a neonate with active sepsis plus sclerema, ongoing NEC, or symptomatic hypoglycemia requiring urgent IV correction would generally not be started on MEN until stabilized.

**107.** (a) Bromocriptine

Bromocriptine is a dopamine agonist that inhibits prolactin secretion, thereby suppressing lactation. It is used to stop breast milk production or in conditions like prolactinoma. Since we do not want to halt or impair milk production in a breastfeeding mother, bromocriptine is effectively contraindicated if she intends to continue breastfeeding. Chlorpromazine, acyclovir, and morphine each have considerations but are not outright contraindications for breastfeeding in typical therapeutic doses.

**108.** (c) Transient tachypnea of the newborn

Transient tachypnea of the newborn (TTN) commonly appears in the first day of life with tachypnea due to delayed clearance of fetal lung fluid. Chest X-ray findings typically show hyperinflation, prominent perihilar streaking, and fluid in the interlobar fissures. Congenital lobar emphysema or diaphragmatic hernia present with more dramatic or asymmetric findings, and a tracheoesophageal fistula typically manifests feeding/respiratory distress or an inability to pass an NG tube, not uniform hyperinflation.

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**109.** (c) 9

By about 3 years of age, a child typically can ascend stairs with alternate feet and copy a circle. Around this same developmental stage, they are able to stack approximately 9 cubes in a tower without it toppling. Fewer blocks (5 or 7) correspond to slightly younger motor milestones, whereas stacking "more than 10" is often observed a bit later. Thus, building a tower of 9 blocks matches the described developmental abilities.

**110.** (a) Flumazenil

Benzodiazepines enhance GABAergic inhibition in the central nervous system. Flumazenil is a specific benzodiazepine receptor antagonist that can rapidly reverse sedation and respiratory depression caused by benzodiazepines. Naloxone is an opioid antagonist, atropine is an antimuscarinic (e.g., for organophosphate or cholinergic excess), and pralidoxime helps regenerate acetylcholinesterase inhibited by organophosphorus compounds.

**111.** (a) Hydroxocobalamin

Burning plastics can release cyanide among other toxic gases. Cyanide poisoning impairs cellular respiration, leading to severe lactic acidosis and respiratory distress. Hydroxocobalamin (a form of vitamin B12) binds cyanide ions to form cyanocobalamin, which can be excreted. Amyl nitrite and sodium nitrite are older components of cyanide antidote kits (they induce methemoglobin formation to trap cyanide), while N-acetyl cysteine is used for acetaminophen toxicity and other conditions, not primarily for cyanide.

**112.** (d) Clinodactyly

Clinodactyly refers to an incurving (usually inward) of a finger, most commonly the fifth (little) finger, often because of a wedge-shaped deformity in the phalanx. It can occur in isolation or be associated with genetic syndromes (e.g., Down syndrome). Camptodactyly is a flexion deformity at the proximal interphalangeal joint, brachydactyly involves shortening of fingers, and syndactyly is fusion of digits.

Acute iron overdose in children can produce severe gastrointestinal irritation (leading to gastric necrosis and hemorrhage), metabolic acidosis, shock, and subsequent hepatic necrosis. Early symptoms typically include severe abdominal pain, vomiting (often bloody), and diarrhea. Calcium or folic acid overdoses do not produce this severe profile of toxicity. Multivitamins (without iron) also rarely cause such severe necrotizing effects.

**98.** (a) Estimation of blood sugar

In a low-birth-weight or preterm neonate presenting with lethargy, high-pitched cry, and feeding difficulty, the highest immediate concern is hypoglycemia. Checking a rapid blood glucose level is a standard first step to quickly rule out or confirm neonatal hypoglycemia. While checking serum calcium or providing oxygen may be relevant if other signs appear, the best initial investigation is blood sugar measurement.

**99.** (b) Atropine

Organophosphorus compounds inhibit acetylcholinesterase, causing overstimulation of muscarinic and nicotinic receptors. Atropine is a muscarinic antagonist that dries secretions (anti-sialogogue) and corrects peripheral parasympathetic excess (e.g., bronchorrhea, bradycardia). Pralidoxime (2-PAM) reactivates acetylcholinesterase (mainly addressing nicotinic symptoms) but does not reduce secretions as effectively as atropine. Carbamates are another class of reversible cholinesterase inhibitors, and benzodiazepines are used for seizures, not for parasympathetic overdrive.

**100.** (d) Ketamine

Ketamine provides both sedation and analgesia, making it well-suited for short, potentially painful procedures in children. It preserves airway reflexes, often maintaining stable hemodynamics. Midazolam alone offers sedation and anxiolysis but less analgesia. Propofol provides good sedation but minimal intrinsic analgesia and can lead to hypotension. Chloral hydrate is mainly a sedative/hypnotic without robust analgesic properties.

**101.** (c) Adenosine

For acute management of paroxysmal supraventricular tachycardia (SVT) in children, adenosine (given rapidly IV) is the first-line pharmacological agent. It transiently blocks AV nodal conduction, often restoring normal sinus rhythm. Lidocaine is used for ventricular arrhythmias, atropine can increase heart rate (used in bradyarrhythmias), and naloxone reverses opioid-induced respiratory depression—not SVT.

**102.** (d) Amiodarone

In ventricular fibrillation or pulseless ventricular tachycardia, advanced life support protocols recommend immediate defibrillation, followed by epinephrine and, if the rhythm persists or recurs, an antiarrhythmic. The preferred antiarrhythmic is amiodarone. Lidocaine is an alternative if amiodarone is not available. Adenosine is used for stable SVT, and atropine is for severe bradycardia or certain AV blocks.

**103.** (b) The baby's chin touches the breast

Key signs of good latch include: the chin firmly touching the breast, the baby's mouth wide open, lips flanged outward (especially the lower lip), and most of the areola in the mouth (with more areola visible above than below). The baby's nose near—but not necessarily at the exact level of—the nipple is also typical, but the crucial visible hallmark is that the chin deeply contacts the breast. An inverted lower lip suggests a poor latch.

**104.** (a) Pink colour

A "vigorous" baby after meconium-stained amniotic fluid is defined by:

1. Strong respiratory efforts,
2. Good muscle tone, and
3. Heart rate >100 beats/min

Although many healthy newborns do appear pink, "pink colour" per se is not part of the strict "vigorous baby" definition. The baby's color can be variable initially, so the key criteria revolve around respiration, heart rate, and muscle tone.

**105.** (a) It is located over the parietal bones in the subcutaneous plane

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requiring more advanced support than can be offered at primary centers. These units typically have trained staff, appropriate equipment for warmth, feeding support, infection control, and other critical interventions that reduce neonatal morbidity and mortality. The other names listed (NTU, NSU, SSU) are not standard government terms for such facilities.

END

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**20.** The following conditions usually present with proximal muscle weakness, EXCEPT:
(a) Facio-scapulo-humeral dystrophy
(b) Myotonia dystrophica
(c) Duchene's muscular dystrophy
(d) Becker muscular dystrophy

**21.** Pel-Ebstein fever is seen in:
(a) Hodgkin's disease
(b) Malaria
(c) Kalazar
(d) Typhoid fever

**22.** All of the following are true regarding acute leukaemias, EXCEPT:
(a) Promyelocytic leukaemia may present with DIC
(b) Gum hypertrophy is a feature of monocytic leukaemia
(c) Translocation is a common chromosomal abnormality in acute myeloid leukaemia
(d) Auer rods suggest acute lymphocytic leukaemia

**23.** All of the following are clinical features of Polycystic ovarian syndrome EXCEPT:
(a) Menorrhagia
(b) Hirsutism
(c) Glucose intolerance
(d) Infertility

**24.** Clinical features of Turner syndrome include all EXCEPT:
(a) Webbing of Neck
(b) Narrow carrying angle of Elbow
(c) Coarctation of Aorta
(d) Short stature

**25.** Pretibial myxedema is a clinical feature of:
(a) Hypothyroidism
(b) Graves disease
(c) Cushing disease
(d) Conn syndrome

**26.** Match the List I with List II and select the correct answer using the code given below the lists:

| | **List I (disease)** | | **List II (signs)** |
|---|---|---|---|
| A. | Conn syndrome | 1. | Anosmia |
| B. | Turner syndrome | 2. | Tetany |
| C. | Kallman syndrome | 3. | Lymphoedema |
| D. | Cushing syndrome | 4. | Avascular necrosis of hip |

Options
(a) A-4 B-1 C-3 D-2
(b) A-2 B-3 C-1 D-4
(c) A-2 B-1 C-3 D-4
(d) A-4 B-3 C-1 D-2

**27.** Which of the following is NOT a part of Koch's postulates?
(a) The same organism must be present in every case of the disease
(b) The organism must be isolated from the diseased host and grown in culture
(c) The isolate must cause the disease when incubated
(d) The organism may not be reisolated from the incubated diseased host

**28.** All of the following cause dementia EXCEPT:
(a) Huntington's disease
(b) Alzheimer's disease
(c) Vitamin D toxicity
(d) Thiamine deficiency

**29.** The therapeutic level of Digoxin in blood is:
(a) 1–2 ng/ml
(b) 4–6 ng/ml
(c) 6–8 ng/ml
(d) 8–10 ng/ml

**30.** A 40-year old woman presents with sudden onset palpitations. An ECG done reveals narrow-QRS complex tachycardia. The most likely diagnosis is:
(a) Ventricular tachycardia
(b) Pre-excited tachycardia
(c) Paroxysmal supraventricular tachycardia

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(d) All of these

**10.** Airway secretions contain all of the following antimicrobial peptides EXCEPT:
(a) Defensins
(b) Immunoglobulin A (IgA)
(c) Lysozyme
(d) Histidine

**11.** The respiratory motor neuron associated with origin of respiratory cycle is located in:
(a) Pons
(b) Posterior Medulla oblongata
(c) Ventral Medulla oblongata
(d) Mid brain

**12.** Consider the following statements regarding Weight Loss:
1. 4.5 kg over 6-12 months
2. 10 kg over 6-12 months
3. More than 5 % over 6-12 months
4. More than 10 % over 6-12 months

Which of the above constitute significant or clinically important weight loss?
(a) 1 and 3
(b) 1 and 4
(c) 2 and 3
(d) 2 and 4

**13.** Which of the following Ascitic Fluid analysis is most compatible with a diagnosis of Ascites secondary to portal hypertension?
(a) SAAG < 1.1 g/dl ; Ascitic Fluid Protein < 2.5 g/dl
(b) SAAG < 1.1 g/dl ; Ascitic Fluid Protein 2.5 g/dl
(c) SAAG 1.1 g/dl ; Ascitic Fluid Protein < 2.5 g/dl
(d) SAAG 1.1 g/dl ; Ascitic Fluid Protein 2.5 g/dl

**14.** All are the causes of Interstitial lung disease EXCEPT:
(a) Idiopathic Pulmonary Fibrosis
(b) Granulomatosis with Polyangiitis
(c) Sarcoidosis
(d) Bronchial Asthma

**15.** The rhythmic activity recorded on scalp by EEG in a normal awake adult lying quietly with eyes closed is:
(a) Less than 4Hz – Delta rhythm
(b) 4 to 7 Hz – Theta rhythm
(c) 8 to 13 Hz – Alpha rhythm
(d) More than 14 Hz – Beta rhythm

**16.** Transient Monocular blindness may be due to small platelet emboli that occludes:
(a) Posterior Cerebellar artery
(b) Posterior Cerebral artery
(c) Ophthalmic artery
(d) Vertebral artery

**17.** The phenomenon of sparing of macular vision is due to collateral circulation between:
(a) middle and posterior cerebral artery
(b) anterior and middle cerebral artery
(c) anterior and posterior cerebral artery
(d) anterior, middle and posterior cerebral artery

NODIA

**18.** Characteristic features of Horner's Syndrome are:
(a) partial ptosis, enophthalmos, constricted pupil, decreased sweating
(b) partial ptosis, exophthalmos, constricted pupil, decreased sweating
(c) partial ptosis, enophthalmos, dilated pupil, decreased sweating
(d) partial ptosis, enophthalmos, constricted pupil, increased sweating

**19.** All of the following statements are true EXCEPT:
(a) Dorsal column fibres synapse at the cuneate and gracile nuclei
(b) Pain and temperature sensations are carried by lateral spinothalamic tract
(c) Spinal cord ends at lower level of 5th lumbar vertebrae
(d) Dorsal spinocerebellar tract carries fibres from the same side of the body

# QUESTION PAPER 2019

1. Austin Flint Murmur occurs in:
   (a) Severe Mitral Stenosis
   (b) Severe Mitral Regurgitation
   (c) Severe Aortic Regurgitation
   (d) Severe Aortic Stenosis"

2. Which amongst the following should be considered in a patient with acute chest pain and ST segment elevation in the precordial leads?
   1. Acute myocardial infarction
   2. Acute hyperkalemia
   3. Pericarditis
   4. Hypocalcemia
   5. Oesophagitis
   6. Pneumothorax

   Select the correct answer using the code given below.
   (a) 1, 2 and 3
   (b) 1, 3 and 4
   (c) 1, 4 and 5
   (d) 2, 3 and 6

3. Which amongst the following is the most powerful independent risk factor for atherosclerosis?
   (a) Age
   (b) Hypertension
   (c) Gender
   (d) Physical Activity

4. In which of the following SA node dysfunction conditions, permanent pacing may NOT be required?
   1. Beta blocker drugs
   2. Narcotic drugs
   3. Iatrogenic–Post RT/Surgery
   4. Hypothyroidism
   5. Sick sinus syndrome
   6. Raised Intracranial tension

   Select the correct answer using the code given below.
   (a) 1, 2, 3 and 4
   (b) 1, 2, 4 and 5
   (c) 1, 2, 4 and 6
   (d) 3, 5 and 6

5. Kartagener syndrome has the following features EXCEPT:
   (a) Recurrent Sinusitis
   (b) Transposition of Viscera
   (c) Autosomal Dominant
   (d) Bronchiectasis

6. Which of the following pulmonary function set is characteristic of COPD?
   (a) FEV1 / FVC < 70% ; FEV1 ↓ ; FVC ↓ ; TLC ↑ DLCO Normal
   (b) FEV1 / FVC < 70% ; FEV1 ↑ ; FVC ↓ ; TLC ↓ DLCO ↓
   (c) FEV1 / FVC < 70% ; FEV1 ↓ ; FVC ↑ ; TLC ↑ DLCO ↑
   (d) FEV1 / FVC < 70% ; FEV1 ↓ ; FVC ↓ ; TLC ↓ DLCO ↓

7. Which of the following drugs causes dry cough as a side effect?
   (a) Fluconazole
   (b) Ramipril
   (c) Cefixime
   (d) Atenolol

8. For Acid Fast Bacilli (AFB) to be detected in sputum by the direct microscopy, the bacillary burden in sputum typically is:
   (a) 500–1,000 organisms
   (b) 5,000–10,000 organisms
   (c) 10,000–20,000 organisms
   (d) Any number of organisms

9. The pleural fluid is considered as empyema if following is present in it:
   (a) Fluid glucose < 60 mg/dl
   (b) Lactate Dehydrogenase (LDH) of more than 1000 U/L
   (c) Fluid pH of less than 7.0

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with aberrancy
(d) AV reentry tachycardia

31. Which of the following statements are true about management of acute pulmonary oedema?
1. Put the patient in relaxed, supine position
2. Give high flow, high concentration oxygen
3. Administer Furosemide intravenously
4. No role of Nitrates
Select the correct answer using the code given below:
(a) 1 and 2
(b) 2 and 3
(c) 3 and 4
(d) 1 and 4

32. Which of the following does NOT cause prolongation of QT interval?
(a) Hypomagnesaemia
(b) Hyperkalaemia
(c) Erythromycin
(d) Amiodarone

33. A 21-year young man presents in emergency with high grade fever with inflammation of knee and ankle joints which is fleeting in nature. There is history of occasional palpitations. There is no history of antecedent sore throat. On examination, splenomegaly is present. The ECG shows prolongation of PR interval. What is the most likely diagnosis in India?
(a) Still disease
(b) Enteric fever
(c) Rheumatic fever
(d) Reiter's syndrome

34. A 50-year gentleman with Type-2 Diabetes mellitus for 5 years presents in medical emergency with sudden onset of dyspnoea at rest, orthopnoea, and prostration. On examination, pulse is rapid and very weak in volume. His blood pressure is 100/70 mmHg. There are diffuse crepitations at lung bases. What is the most likely diagnosis of his conditions?
(a) Mitral stenosis with bacterial endocarditis
(b) Right heart failure
(c) Left heart failure
(d) Constrictive pericarditis

35. The 'Y' descent in JVP waveform represents:
(a) Atrial relaxation
(b) Atrial systole
(c) Atrial emptying
(d) Apical displacement of tricuspid valve

36. While distinguishing a venous pulsation from the arterial pulsation in neck, which of the following is NOT correct?
(a) The height of venous pulse varies with respiration
(b) Abdominal pressure causes rise in venous pulse
(c) Venous pulse has a single peak in each cardiac cycle
(d) Venous pulse is not easily palpable

37. Which of the following does NOT cause pulmonary infiltrates with eosinophilia?
(a) Bronchial asthma
(b) Postradiation pneumonitis
(c) Eosinophilic granulomatosis with polyangiitis
(d) Cystic fibrosis

38. Total lung capacity is decreased in which one of the following conditions?
(a) Asthma
(b) Chronic bronchitis
(c) Pulmonary fibrosis
(d) Emphysema

39. Which one of the following is the minimum spirometry criterion for diagnosis of bronchial asthma?
(a) Decrease in FEV1 $\geq$ 20 % after 6 minutes of exercise
(b) Increase in FEV1 $\geq$ 12 % following administration of inhaled bronchodilators
(c) Increase in 500 ml of FEV1 after glucocorticoids inhalation
(d) Less than 20 % diurnal variation on more than 3 days a week on PEF diary

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**40.** Modified Blatchford score is used for the risk stratification of:
(a) Pancreatitis
(b) Sepsis
(c) Upper gastrointestinal bleeding
(d) Cholangitis

**41.** Long term use of proton pump inhibitor in elderly puts the patient at risk of which of the following?
1. Community acquired pneumonia
2. Clostridium difficile associated disease
3. Urinary tract infection

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) 1 and 2
(d) 2 and 3

**42.** Regardless of the infectious agent, the most characteristic symptom of infectious esophagitis is:
(a) Dysphagia
(b) Chest pain
(c) Odynophagia
(d) Haematemesis

**43.** The parameters used in modified Child-Pugh classification for staging cirrhosis are:
(a) Serum bilirubin, serum albumin only
(b) Serum albumin, serum bilirubin, prothrombin time only
(c) Serum albumin, serum bilirubin, prothrombin time, ascites only
(d) Serum albumin, Serum bilirubin, prothrombin time, ascites, hepatic encephalopathy

**44.** All of the following are consistent with a diagnosis of Irritable Bowel Syndrome EXCEPT:
(a) Recurrent lower abdominal pain
(b) Altered bowel habits
(c) Symptoms during periods of stress
(d) Weight loss

**45.** A 26-year old HIV infected male presents with odynophagia. Upper GI endoscopy demonstrates serpiginous ulcers in a normal surrounding mucosa in distal esophagus. The most likely diagnosis is:
(a) Gastro esophageal reflux disease
(b) Cytomegalovirus esophagitis
(c) Candida esophagitis
(d) Herpetic esophagitis

**46.** Cytomegalovirus esophagitis is particularly common in which group of patients?
(a) Diabetes mellitus
(b) Chronic liver disease
(c) Alcoholics
(d) Organ transplant recipients

**47.** Which of the following is the most important complication in a patient with coeliac disease, who was previously doing well on a gluten-free diet and is now not responding to gluten restriction?
(a) Intestinal infection
(b) Intestinal lymphoma
(c) Resistant coeliac disease
(d) Type II Diabetes mellitus

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**48.** Which of the following are potential side effects of Anti-TNF therapies?
1. Infusion reactions
2. Melanoma
3. T-cell lymphoma

Select the correct answer using the code given below:
(a) 1 and 3 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

**49.** Presence of gastrinoma tumor should be suspected in which of the following conditions?
1. Ulcers in unusual location
2. Ulcers in the presence of H. pylori
3. Ulcers with frank complication like perforation

Select the correct answer using the code given below:
(a) 1, 2 and 3

(b) 2 and 3 only
(c) 1 and 3 only
(d) 1 and 2 only

**50.** Coeliac disease is associated with which of the following medical conditions?
1. Dermatitis herpetiformis
2. Diabetes mellitus type II
3. Turner syndrome
4. IgA deficiency

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

**51.** Which of the following features are characteristics of Whipple disease?
1. Migratory small joint arthropathy
2. Diarrhoea with steatorrhea
3. Weight loss with Arthralgia
4. Ophthalmic and CNS symptoms

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

**52.** Which of the following are suggestive of protein losing enteropathy?
1. Steatorrhoea and diarrhoea
2. Peripheral oedema
3. Marked reduction of serum albumin with normal serum globulin

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**53.** Which of the following statements regarding Ankylosing spondylitis (AS) are true?
1. AS occurs in about 10 % of Inflammatory Bowel Disease (IBD) patients
2. The AS activity is related to Bowel activity in IBD patients
3. The AS activity does remit with glucocorticoids or colectomy in IBD patients

Select the correct answer using the code given below:
(a) 2 and 3
(b) 1 and 3
(c) 3 only
(d) 1 only

**54.** Which of the following are the renal complications of radiological investigations?
1. Contrast nephrotoxicity
2. Cholesterol atheroembolism
3. Nephrogenic sclerosing fibrosis of skin

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**55.** A middle aged diabetic male who has recurrent chest pain undergoes coronary artery angiogram. The following day, he develops haematuria, proteinuria and renal impairment. What is the most likely diagnosis?
(a) Renal artery stenosis
(b) Acute renal infarction
(c) Atheroembolism
(d) Haemolytic Uraemic syndrome

**56.** Which of the following are contraindications for renal biopsy?
1. Normal size kidney
2. Uncontrolled hypertension
3. Solitary kidney
4. Disordered coagulation

Select the correct answer using the code given below:
(a) 1, 2 and 4
(b) 1, 2 and 3
(c) 2, 3 and 4
(d) 1, 3 and 4

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**57.** The most specific test that establishes the diagnosis of Myasthenia gravis is:
(a) Anti-acetylcholine receptor antibody
(b) Repetitive nerve stimulation test
(c) Edrophonium test
(d) MRI brain

**58.** The commonest cause for new-onset seizures in patients older than 65 years is:
(a) Trauma
(b) Cerebrovascular disease
(c) Tumors
(d) Degenerative disease

**59.** Ipsilateral 3rd cranial nerve palsy with contralateral cerebellar signs is seen in:
(a) Weber syndrome
(b) Wallenberg syndrome
(c) Parinaud syndrome
(d) Claude syndrome

**60.** Incongruous contralateral homonymous hemianopia is due to lesion at:
(a) Optic nerve
(b) Optic chiasma
(c) Optic tract
(d) Optic radiation

**61.** Macrocytosis is seen in all of the following conditions EXCEPT:
(a) Liver disease
(b) Post splenectomy
(c) Hypothyroidism
(d) Myelodysplastic syndrome

**62.** All of the following cause microcytic hypochromic anemia EXCEPT:
(a) Thalassemia
(b) Anemia of chronic disease
(c) Sideroblastic anemia
(d) Haemolytic uraemic syndrome

**63.** Treatment with the following drugs can lead to neutropenia EXCEPT:
(a) Glucocorticoids
(b) Propylthiouracil
(c) Dapsone
(d) Enalapril

**64.** Which one of the following is a cause of early (0–4 weeks) infection in recipients of haematopoietic stem cell transplantation?
(a) Cytomegalovirus
(b) Pneumocystis jirovecii
(c) Varicella zoster
(d) Herpes simplex

**65.** Which of the following is/are neurological manifestation(s) of vitamin B12 deficiency?
1. Poor memory
2. Optic atrophy
3. Personality change

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 3 only
(c) 2 only
(d) 1, 2 and 3

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**66.** Which of the following infections does NOT cause cold antibodies immune haemolysis?
(a) Mycoplasma
(b) Malaria
(c) Syphilis
(d) Epstein–Barr virus

**67.** Which of the following test has maximum sensitivity for diagnosing Pheochromocytoma?
(a) MIBG scintigraphy
(b) Somatostatin receptor scintigraphy
(c) Fluro-DOPA PET scan
(d) 24 hours urinary fractionated metanephrines and catecholamines

**68.** Which of the following does NOT cause polyuria?
(a) Diabetes mellitus
(b) Diabetes insipidus
(c) Hypoparathyroidism
(d) Conn syndrome

**69.** A 24 year female presented with generalized weakness. Her thyroid function test is as follows. Serum T3 = Normal, T4 = Normal, TSH = 10 mU/L. What is the most likely diagnosis?
(a) Primary hypothyroidism
(b) Secondary hypothyroidism
(c) Subclinical hypothyroidism
(d) Non thyroidal illness

**70.** A 26 year old lady has a Prolactinoma (microadenoma). The best modality of treatment for her condition is:
(a) Oral Cabergoline
(b) Oral Bromocriptine
(c) Surgery
(d) Radiotherapy

**71.** A 30-year woman in first trimester of pregnancy has Graves' disease. The treatment of choice is:
(a) Radioiodine
(b) Subtotal thyroidectomy
(c) Carbimazole
(d) Propylthiouracil

**72.** The gold standard for diagnosis of Wilson's disease is:
(a) Demonstration of Kayser–Fleischer rings
(b) Urinary copper excretion
(c) Serum ceruloplasmin
(d) Liver biopsy with quantitative copper assays

**73.** A 32-year old HIV infected male presents with shortness of breath and moderate fever of two-week duration. On examination, cyanosis is present, with respiratory rate of 22/min and some basal crackles in chest. The CT chest shows bilateral ground-glass pattern. The most likely etiologic diagnosis is:
(a) Streptococcus pneumoniae
(b) Pneumocystis jirovecii
(c) Mycobacterium tuberculosis
(d) Staphylococcus sp.

**74.** A 22-year old male is admitted with fever and altered consciousness for two days. Examination reveals nuchal rigidity and diffuse petechial rash on the trunk and lower extremities. The most likely etiologic agent is:
(a) Escherichia coli
(b) Streptococcus pneumoniae
(c) Neisseria meningitidis
(d) Haemophilus influenzae

**75.** The drug of choice for the treatment of severe falciparum malaria in a 32-week pregnant woman is:
(a) Artesunate
(b) Quinine
(c) Chloroquine
(d) Quinidine

**76.** A 36-year old chronic alcoholic, malnourished male is hospitalized with pneumonia. His condition worsens after aggressive treatment with intravenous dextrose and antibiotics. The phenomenon of 'Refeeding Syndrome' is accompanied by which one of the following biochemical alterations?
(a) Hypophosphatemia
(b) Hyponatremia
(c) Hyperkalemia
(d) Hypermagnesemia

**77.** A 28-year old man weighs 80 kg and has a height of 150 cm. Based on his body mass index, he will be categorized as:
(a) Normal
(b) Underweight
(c) Overweight
(d) Obese

**78.** Angular stomatitis and cheilosis are indicative of deficiencies of which of the following vitamins?
1. Riboflavin
2. Pyridoxine
3. Thiamine
4. Niacin

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 2 and 4

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(b) OPV
(c) DPT
(d) MMR

**120.** Which of the following drugs is NOT included in the management of Attention Deficit Hyperactivity Disorder (ADHD)?
(a) Amphetamine
(b) Atomoxetine
(c) Methylphenidate
(d) Trientine

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**88.** A 30-year old male was being evaluated for paraparesis. On examination, there was severe muscle atrophy, with absent deep tendon reflexes and absent Babinski sign. The most likely possibility is:
(a) Upper motor neuron disease
(b) Lower motor neuron disease
(c) Psychogenic cause
(d) Cerebellar disease

**89.** A 16-year old boy presented with fever and a diffuse maculopapular rash. Examination revealed generalised cervical lymphadenopathy and hepatosplenomegaly. After intake of Ampicillin (prescribed by a local practitioner), the rash worsened. The most likely diagnosis is:
(a) Dengue fever
(b) Measles
(c) Drug-rash
(d) Infectious mononucleosis

**90.** The phenomenon wherein normally innocuous stimuli produce pain is called:
(a) Hyperalgesia
(b) Allodynia
(c) Analgesia
(d) Sensitization

**91.** A 76-year old male categorized as frail is likely to have overt changes in:
1. Body composition
2. Homeostatic dysregulation
3. Energetic failure
4. Neurodegeneration

Select the correct answer using the code given below:
(a) 1, 2, 3 and 4
(b) 1, 2 and 3 only
(c) 2 and 4 only
(d) 1 and 3 only

**92.** Nitroglycerin is NOT used as an oral tablet because of its:
(a) Poor solubility
(b) Poor degradibility
(c) High pre systemic metabolism
(d) Unpalatability

**93.** Confabulation is a feature of the deficiency of:
(a) Niacin
(b) Folic acid
(c) Thiamine
(d) Zinc

**94.** Following the bite of a snake, a patient develops generalised myalgias, rhabdomyolysis, and progressive flaccid paralysis. The most likely snake implicated is:
(a) Cobra
(b) Krait
(c) Russel viper
(d) Sea snake

**95.** A 65-year old man, on Warfarin treatment, is started on antitubercular treatment. The pharmacologic effect of Warfarin is likely to:
(a) Increase
(b) Decrease
(c) Remain the same
(d) Be unpredictable and variable

**96.** All of the following are components of the Wernicke's syndrome EXCEPT:
(a) Ataxia
(b) Ophthalmoplegia
(c) Retrograde amnesia
(d) Encephalopathy

**97.** During Neonatal Resuscitation, chest compressions should be discontinued once the heart rate is:
(a) $\geq$60 beats per minute
(b) $\geq$80 beats per minute
(c) $\geq$100 beats per minute
(d) Regular on auscultation

**98.** A 5 day-old neonate is brought with abdominal distention and non-passage of meconium since birth. On per rectal examination, the anal tone is normal and the rectum is empty of faeces. There is rapid expulsion of faeces after the digital examination. Which test will help you to establish the diagnosis?
(a) Rectal Manometry
(b) Barium follow through contrast study

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(c) Rectal suction biopsy
(d) Colonoscopy

**99.** Which of the following advantages is NOT associated with delayed cord clamping in term babies?
(a) Improvement is haematological status
(b) Increased iron levels
(c) Decreased levels of physiological anemia of infancy
(d) Reduction in hyperbilirubinemia

**100.** A term neonate delivered through meconium stained liquor is found to be having poor respiratory efforts soon after birth. The most appropriate management for this child would be:
(a) Intrapartum suctioning of mouth and nose before delivery of shoulders
(b) Post natal tracheal suctioning
(c) Immediate suctioning of mouth and nose
(d) Initial steps of neonatal resuscitation

**101.** Which one of the following figures should a five year old developmentally normal child be able to draw?
(a) Rectangle
(b) Triangle
(c) Circle
(d) Cross

**102.** Which of the following manifestations is/are NOT seen in breath holding spells?
(a) Apnea
(b) Tonic clonic movements
(c) Drowsiness after the episode
(d) Pallor

**103.** Which of the following toxidromes is associated with the consumption of pesticides containing organophosphates?
(a) Adrenergic
(b) Serotonergic
(c) Cholinergic
(d) Hypnotic

**104.** Which of the following is the primary antidote used in children with organophosphate poisoning?
(a) Atropine
(b) Physostigmine
(c) Sodium bicarbonate
(d) Naloxone

**105.** Till what age should corrected age be used (rather than chronological age) for the development assessment of babies born preterm?
(a) 6 months
(b) 1 years
(c) 2 years
(d) 2.5 years

**106.** Which of the following is NOT a maternal risk factor for the development of a neural tube defect?
(a) Insulin dependent Diabetes Mellitus
(b) Exposure to radiation
(c) Intake of Phenytoin
(d) Folate deficiency

**107.** Trisomy 13 is also known as:
(a) Edward syndrome
(b) Patau syndrome
(c) Turner syndrome
(d) Williams syndrome

**108.** Which one of the following is a type of glycogen storage disease?
(a) Andersen disease
(b) Gaucher disease
(c) Krabbe disease
(d) Sandhoff disease

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**109.** Which of the following biochemical tests for the detection of aneuploidies is performed in the first trimester of pregnancy?
(a) Serum alpha-feto protein
(b) Pregnancy associated plasma protein A
(c) Unconjugated estriol
(d) Inhibin A

**110.** Which of the following is NOT a birth defect related to a disorder in the development of the whole eyeball?
(a) Anophthalmos
(b) Cryptophthalmos
(c) Microphthalmos
(d) Nanophthalmos

**111.** Which of the following types of tracheoesophageal fistulae is the most common?
(a) The upper part of the esophagus ends blindly and the lower end is connected to the trachea by a fistula
(b) There is no fistulous connection between either the upper or the lower parts of the esophagus and the trachea
(c) The upper part of the esophagus opens into the trachea
(d) Both the upper and lower parts of the esophagus open into the trachea

**112.** Which one of the following antiretroviral drugs is a Nucleoside reverse transcriptase inhibitor?
(a) Amprenavir
(b) Indinavir
(c) Abacavir
(d) Nevirapine

**113.** All of the following statements are true about the BCG vaccine EXCEPT:
(a) It has 50–80% protection against miliary and meningeal forms of tuberculosis
(b) It does not protect against other mycobacterial diseases like leprosy
(c) It induces primary cell mediated immunity
(d) There is interference with its effect due to maternal antibodies

**114.** A 10 year-old boy has received complete pre-exposure vaccination with the rabies vaccine. He is bitten on the hand by a stray dog within a year of the last dose. Which of the following will be the recommended treatment option?
(a) Irrigation of the wound with water for ten minutes followed by povidone iodine (local care)
(b) Local wound care and local infiltration with rabies Immunoglobulin (RIG)
(c) Local wound care and 2 doses of rabies vaccine (day 0 and 3)
(d) Local wound care and local infiltration of wound with RIG and 2 dose of rabies vaccine (day 0 and 3)

**115.** Which of the following combinations of the Human Papilloma Virus (HPV) serotypes are non-oncogenic?
(a) 6 and 11
(b) 6 and 16
(c) 6 and 18
(d) 16 and 18

**116.** What type of vaccine is the Rotavirus vaccine?
(a) Live attenuated organism
(b) Killed organism
(c) Toxoid
(d) Subunit vaccine

**117.** What is the risk of recurrence for Down's syndrome when the underlying cause is a translocation inherited from the father?
(a) 1 %
(b) 4–5 %
(c) 10 %
(d) 100 %

**118.** An 8 month old infant with evolving Cerebral Palsy is diagnosed with the first episode of Urinary Tract Infection. What further radiological evaluation should be planned?
(a) Ultrasound of the abdomen (KUB) only
(b) Ultrasound of the abdomen (KUB) and Micturating Cystourethrogram (MCU) only
(c) Ultrasound of the abdomen (KUB), Micturating Cystourethrogram (MCU) and radionuclide renal scan (99Tc DMSCA scan)
(d) Radionuclide or ultrasound scan (99Tc DMSA scan) followed by MCU (if required )

**119.** Which one of the following vaccines is NOT included in Mission Indradhanush?
(a) BCG

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# PAPER 2019 ANSWERS

1. (c) Severe Aortic Regurgitation

An Austin Flint murmur is a low-pitched, mid-diastolic rumble best heard at the cardiac apex in severe aortic regurgitation. The regurgitant jet from the aorta strikes the anterior leaflet of the mitral valve, causing it to vibrate and produce a sound that can mimic mitral stenosis but occurs in the absence of an actual mitral valve obstruction. The murmur's presence is closely tied to the intensity of the regurgitant flow and disappears if that flow is significantly reduced.

2. (a) 1, 2 and 3

Acute myocardial infarction, hyperkalemia, and pericarditis are all important considerations in a patient presenting with chest pain and ST-segment elevation. While MI and pericarditis are well-known causes of ST elevation, severe hyperkalemia can also produce changes that can mimic or appear as ST shifts. Oesophagitis may cause chest pain but does not typically cause ST elevation. Hypocalcemia mainly prolongs the QT interval, and pneumothorax can alter ECG voltages or axes rather than causing true ST elevation.

3. (b) Hypertension

Hypertension is a major, modifiable risk factor for atherosclerosis because chronically elevated blood pressure damages the arterial endothelium and promotes plaque formation. Over time, the increased shear stress leads to endothelial dysfunction, facilitating lipid accumulation and inflammatory changes. While age, gender, and lifestyle factors also influence atherosclerosis development, hypertension remains one of the strongest and most direct contributors to its progression. Controlling blood pressure significantly reduces the likelihood of vascular complications such as stroke, coronary artery disease, and peripheral vascular disease.

4. (c) 1, 2, 4 and 6

SA node dysfunction can sometimes be reversible if it results from extrinsic causes such as medication effects (beta blockers or narcotics), hypothyroidism, or raised intracranial pressure. Correcting these underlying factors (e.g., adjusting drug dosages, treating hypothyroidism, reducing intracranial tension) can restore normal sinus function without the need for permanent pacemaker implantation. By contrast, iatrogenic surgical damage or intrinsic sick sinus syndrome often leads to permanent structural or functional impairment of the sinoatrial node, making permanent pacing more likely.

5. (c) Autosomal Dominant

Kartagener syndrome, a subset of primary ciliary dyskinesia, classically presents with the triad of situs inversus (transposition of viscera), chronic sinusitis, and bronchiectasis. It arises from a defect in the dynein arms of cilia, leading to impaired mucociliary clearance. The inheritance pattern is autosomal recessive, not autosomal dominant. Patients typically suffer from recurrent respiratory infections, nasal polyps, and complications related to defective mucus clearance. Identifying the inheritance correctly is crucial in genetic counseling and family studies.

6. (a) FEV1 / FVC < 70% ; FEV1 ↓ ; FVC ↓ ; TLC ↑ DLCO Normal

COPD (especially chronic bronchitis type) typically presents with an obstructive pattern on spirometry: FEV1/FVC < 70%, indicating airflow limitation. FEV1 is decreased, and FVC can be normal or slightly reduced, but the hallmark is a reduced ratio. Total lung capacity (TLC) is often increased due to air trapping and hyperinflation. In many COPD cases, particularly chronic bronchitis, DLCO can remain normal, though it is often reduced in emphysema-dominant COPD. The key diagnostic criterion remains the reduced FEV1/FVC ratio.

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(c) 2, 3 and 4
(d) 1, 3 and 4

**79.** Which of the following statements about 'Early onset Osteoarthritis' are true?
1. Onset is usually before the age of 55 years
2. There is clear history of previous trauma
3. In most cases, single joint is affected

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**80.** A 31-year young man presents with fever, weight loss, pain with swelling of knee joint and low backache with stiffness. Three weeks earlier, he was treated for urinary tract infection. The joint aspirate is leukocyte rich and contains multinucleated macrophages. His urine culture is sterile. What is the most probable diagnosis?
(a) Septic arthritis
(b) Crystal arthritis
(c) Reactive arthritis
(d) Still disease

**81.** Consider the following statements regarding Gout in old age.
1. Most of older patients have gout secondary to diuretic use and chronic kidney disease
2. Joints of the upper limbs are more frequently affected
3. Presentation is typical with acute attack of gout

Which of the statements given above are correct?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**82.** A 28-year old woman complains of arthritis involving bilateral metacarpophalangeal, proximal interphalangeal and wrist joints of one year duration. The most likely disease entity is:
(a) Systemic lupus erythematosus
(b) Ankylosing spondylitis
(c) Rheumatoid arthritis
(d) Osteoarthritis

**83.** Which of the following are the complications of Rheumatoid arthritis?
1. Peripheral entrapment neuropathies
2. Subluxation of the cervical spine at the atlanto-axial joint
3. Primary amyloidosis
4. Lymphoma

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

**84.** Which of the following is an Interleukin-17A (IL-17A) antibody?
(a) Ustekinumab
(b) Infliximab
(c) Secukinumab
(d) Etanercept

**85.** The mainstay treatment of bipolar disorders is:
(a) Oxcarbazine
(b) Lithium
(c) Risperidone
(d) Olanzapine

**86.** During assessment of hearing in a 30-year old male, the Weber test reveals perceived tone in the left ear. He is likely to be suffering from:
(a) Left sensorineural deafness
(b) Left conductive deafness
(c) Right sensorineural deafness
(d) Right conductive deafness

**87.** A 56-year old man presented with acute onset aphasia. Speech output was markedly reduced with preserved comprehension of spoken language. The area of brain involved is:
(a) Posterior part of temporal lobe
(b) Cerebellum
(c) Midbrain
(d) Inferior frontal gyrus

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7. (b) Ramipril

ACE inhibitors (such as Ramipril, Enalapril, Lisinopril) commonly cause a persistent, nonproductive (dry) cough. This happens because they inhibit the breakdown of bradykinin and substance P in the lungs, leading to accumulation of these peptides and triggering a cough reflex. Though harmless, the cough can be bothersome enough that some patients discontinue therapy or switch to angiotensin receptor blockers (ARBs), which do not have this effect on bradykinin levels. Monitoring cough is important when starting or adjusting ACE inhibitors.

8. (c) 10,000–20,000 organisms

Direct microscopy for Mycobacterium tuberculosis using Ziehl-Neelsen (ZN) staining requires a relatively high bacterial load—generally around 10,000 bacilli per milliliter of sputum—to yield a positive smear. This means that patients with lower numbers of organisms in their sputum can produce a false-negative result, despite active infection. Culture techniques and molecular tests are more sensitive and can detect fewer organisms, but sputum smear microscopy remains a standard, rapid, and cost-effective initial test in diagnosing pulmonary tuberculosis.

9. (d) All of these

Empyema refers to pus in the pleural space or an infected pleural effusion. Key biochemical findings supporting this diagnosis include very low glucose (<60 mg/dL), high LDH (often >1000 U/L), and an acidic pH (<7.0). These changes reflect active bacterial infection and inflammation in the pleural cavity. Empyema typically arises from pneumonia (parapneumonic effusion), lung abscess, or thoracic surgery/trauma. Effective management includes appropriate antibiotics and, often, drainage of the infected fluid to prevent complications like fibrous organization and lung entrapment.

10. (d) Histidine

Airway secretions are rich in antimicrobial substances such as defensins, secretory IgA, and lysozyme, which help neutralize or destroy pathogens before they can invade the respiratory tract. Defensins are small cationic peptides that disrupt bacterial membranes, IgA prevents pathogen adherence to mucosal surfaces, and lysozyme cleaves bacterial cell walls. "Histidine" by itself is simply an amino acid, not an established antimicrobial peptide. "Histatins," found in saliva, do have antimicrobial properties, but "Histidine" alone is not listed as an airway antimicrobial agent.

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11. (c) Ventral Medulla oblongata

The primary respiratory rhythm generator resides in the medulla oblongata, specifically in the ventral respiratory group (VRG), which includes the Pre-Bötzinger complex believed to be critical for the basic rhythm of breathing. The dorsal respiratory group (DRG) in the medulla primarily handles inspiratory drive and sensory input. The pons modulates the medullary centers but does not originate the core rhythm. Thus, the ventral medulla oblongata houses the key neurons for initiating and coordinating the fundamental breathing cycle.

12. (a) 1 and 3

Weight loss is generally considered clinically significant if it exceeds either 5% of body weight over 6–12 months or around 10 pounds (4.5 kg) over a similar time frame. Statement 1 (4.5 kg over 6-12 months) and Statement 3 (more than 5% over 6-12 months) therefore align with these common clinical thresholds. Greater degrees of weight loss, such as 10 kg or >10% over 6–12 months, are certainly notable but are not the standard minimal cutoff used to define clinically significant weight loss.

13. (c) SAAG 1.1 g/dl ; Ascitic Fluid Protein < 2.5 g/dl

A serum-ascites albumin gradient (SAAG) of greater than 1.1 g/dL typically indicates portal hypertension, most often due to cirrhosis but also possible from congestive heart failure or Budd-Chiari syndrome. In cirrhotic ascites, the ascitic fluid protein is often low (<2.5 g/dL) because of the transudative nature of the fluid. A high SAAG with a low ascitic protein is

combination for PPI-related risks in the elderly is (1) pneumonia and (2) C. difficile disease.

**42.** (c) Odynophagia

Infectious esophagitis (most commonly caused by Candida, herpes simplex virus, or cytomegalovirus in immunocompromised patients) typically presents with painful swallowing, or "odynophagia," which is more characteristic than simple dysphagia. While dysphagia, chest pain, and even bleeding can occur, odynophagia—sharp or burning pain when swallowing—is the hallmark. Identifying odynophagia often prompts endoscopic evaluation to visualize any ulcerations or plaque-like lesions, which helps differentiate among the causative organisms.

**43.** (d) Serum albumin, Serum bilirubin, prothrombin time, ascites, hepatic encephalopathy

The Child-Pugh (or Child-Turcotte-Pugh) score is used to assess the prognosis of cirrhosis. It incorporates five criteria: serum bilirubin, serum albumin, prothrombin time (or INR), ascites, and hepatic encephalopathy. Each parameter is assigned points based on severity. The modified version follows the same essential measures, reflecting both synthetic liver function (albumin, coagulation) and clinical severity (ascites, encephalopathy). Options listing fewer factors omit at least one of the needed parameters.

**44.** (d) Weight loss

Irritable Bowel Syndrome (IBS) is a functional gastrointestinal disorder characterized by chronic, recurrent abdominal pain or discomfort associated with altered bowel habits (diarrhea, constipation, or both), often influenced by stress. It typically does not cause significant weight loss because there is no destructive process affecting nutrient absorption. The presence of unexplained, clinically relevant weight loss should prompt investigation for organic diseases such as inflammatory bowel disease, malabsorption syndromes, or malignancies rather than IBS.

**45.** (b) Cytomegalovirus esophagitis

In immunocompromised patients (e.g., HIV with low CD4 counts), CMV esophagitis typically shows large, linear or "serpiginous" ulcers with relatively normal adjacent mucosa on endoscopy. Candida esophagitis usually presents with white plaques, and herpes esophagitis tends to cause smaller, well-demarcated "punched-out" ulcers. GERD can cause erosions or ulcerations but is less likely to produce classic serpiginous ulcers in an otherwise normal mucosa in this context.

**46.** (d) Organ transplant recipients

Cytomegalovirus (CMV) infection can become clinically significant in states of immunosuppression, such as HIV/AIDS or in organ transplant recipients receiving immunosuppressive regimens to prevent graft rejection. In these individuals, CMV can infect the esophagus, causing large ulcerations. While diabetics or those with chronic liver disease are somewhat immunocompromised, they are not the classical high-risk group for CMV esophagitis. Organ transplant recipients are at notably higher risk because of the targeted immunosuppression therapy.

**47.** (b) Intestinal lymphoma

In a patient with coeliac disease who initially improves on a gluten-free diet but later deteriorates despite continued adherence, the major concern is development of enteropathy-associated T-cell lymphoma of the small intestine. While "refractory coeliac disease" is possible, the most feared and "important" complication is malignant transformation. These patients often have persistent or worsening malabsorption symptoms and may demonstrate ulcerative jejunoileitis on imaging or endoscopy. Prompt evaluation is crucial to rule out lymphoma.

**48.** (d) 1, 2 and 3

Anti-TNF agents (e.g., infliximab, adalimumab) can cause several significant adverse effects. Infusion reactions (ranging from mild hypersensitivity to severe anaphylaxis) are well known, particularly with IV formulations. Malignancy risk, including melanoma and lymphomas (T-cell or B-cell), is slightly

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(Steinert's disease) more characteristically presents with myotonia (delayed relaxation), and its muscle weakness often shows a distal predominance (hands/feet) and facial involvement rather than classic proximal girdle weakness.

**21.** (a) Hodgkin's disease

Pel-Ebstein fever refers to a pattern of fever that typically rises for several days, then subsides, and may remain normal for days before spiking again. This cyclical fever is classically associated with Hodgkin's lymphoma. Although not present in all Hodgkin's patients, when seen, it is a useful clinical clue. Malaria, kala-azar, and typhoid have their own characteristic fever patterns but do not exhibit the specific cyclical pattern called Pel-Ebstein fever.

**22.** (d) Auer rods suggest acute lymphocytic leukaemia

Auer rods are rod-shaped intracytoplasmic inclusions seen primarily in myeloblasts (acute myeloid leukemia, especially the M3 variant known as acute promyelocytic leukemia). They are not features of acute lymphoblastic (lymphocytic) leukemia (ALL). Promyelocytic leukemia (M3 AML) is well-known for its association with disseminated intravascular coagulation (DIC). Gum hypertrophy occurs especially in monocytic variants of AML. Translocations (e.g., t(15;17) in promyelocytic leukemia) are commonly encountered in acute myeloid leukemias.

**23.** (a) Menorrhagia

Polycystic ovarian syndrome (PCOS) often presents with oligomenorrhea or amenorrhea (reduced or absent menstrual cycles) due to anovulation, not typically menorrhagia (heavy menstrual bleeding). Common clinical features include hyperandrogenism (acne, hirsutism), insulin resistance or glucose intolerance, obesity in many cases, and infertility resulting from irregular ovulation. Menorrhagia is not the typical bleeding pattern in PCOS, so it is the best choice as the "EXCEPT" in this list.

**24.** (b) Narrow carrying angle of Elbow

Turner syndrome (45,X) classically presents with short stature, webbed neck, widely spaced nipples, and coarctation of the aorta. Another well-known feature is cubitus valgus (increased carrying angle at the elbow), not a narrow one. Patients can also show streak ovaries and primary amenorrhea. The "narrow carrying angle" is therefore the incorrect statement. Recognizing cubitus valgus helps distinguish Turner syndrome from other causes of short stature.

**25.** (b) Graves disease

Pretibial myxedema (also called Graves' dermopathy) is characterized by localized lesions on the skin resulting from mucopolysaccharide deposition, typically over the anterior aspects of the lower legs. It is almost exclusively associated with Graves' disease, an autoimmune hyperthyroid condition. While severe hypothyroidism (myxedema) can cause generalized non-pitting edema, "pretibial myxedema" specifically points to Graves' disease. Cushing's disease (hypercortisolism) and Conn syndrome (hyperaldosteronism) do not produce this characteristic localized skin finding.

**26.** (b) A-2 B-3 C-1 D-4

Conn syndrome (primary hyperaldosteronism) can produce alkalosis and resultant tetany (2). Turner syndrome is associated with lymphedema (particularly of the hands and feet at birth) (3). Kallman syndrome, involving GnRH deficiency, is characteristically linked to anosmia (1). Cushing syndrome (hypercortisolism) can predispose to avascular necrosis of the hip (4). Thus, A-2, B-3, C-1, D-4 is the correct matching sequence.

**27.** (d) The organism may not be reisolated from the incubated diseased host

Koch's postulates outline that (1) the organism should be found in all cases of the disease, (2) must be isolated in pure culture, (3) cause the disease when introduced into a healthy host, and (4) can be reisolated from that host. Thus, the idea that "the organism may _not_ be reisolated" contradicts the fourth postulate, which actually

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**69.** (c) Subclinical hypothyroidism

Subclinical hypothyroidism is defined by a normal circulating T4 (and usually T3) but an elevated TSH (often in the 5–10 mU/L range). It suggests mild or early thyroid failure where the gland can still maintain normal hormone levels at the expense of increased pituitary TSH drive. In primary hypothyroidism, the T4 would typically be low, whereas in secondary (pituitary) hypothyroidism, TSH would not be elevated. Non-thyroidal illness usually shows low T3 or altered T4, not an isolated TSH rise.

**70.** (a) Oral Cabergoline

Dopamine agonists are first-line therapy for prolactinomas. Cabergoline is often preferred over bromocriptine because it has a longer half-life, better patient tolerance, and higher efficacy in reducing prolactin levels and tumor size. Bromocriptine is an alternative, especially during pregnancy or if patients cannot tolerate cabergoline. Surgery is reserved for those not responding to or intolerant of medical therapy, and radiotherapy is considered only in refractory cases.

**71.** (d) Propylthiouracil

During the first trimester, Propylthiouracil (PTU) is preferred for treating hyperthyroidism (Graves') because Carbimazole (or its active metabolite, Methimazole) has a slightly higher risk of teratogenic effects (e.g., aplasia cutis). After the first trimester, most guidelines advise switching from PTU back to Methimazole to reduce the risk of PTU-induced hepatotoxicity. Radioiodine ablation is contraindicated in pregnancy, and surgery is usually reserved for specific situations (allergy to medications, severe adverse reactions, or extremely large goiters).

**72.** (d) Liver biopsy with quantitative copper assays

Although Kayser–Fleischer rings, low serum ceruloplasmin, and elevated urinary copper are highly suggestive of Wilson's disease, the definitive gold standard remains liver biopsy with direct measurement of hepatic copper content. This test quantifies copper deposition in liver tissue. Other tests are also performed as part of the clinical work-up: slit-lamp exam for KF rings, 24-hour urinary copper, and ceruloplasmin levels. In ambiguous cases, the liver copper assay provides a definitive assessment.

**73.** (b) Pneumocystis jirovecii

In an HIV-infected patient with subacute onset of respiratory symptoms and bilateral ground-glass opacities on imaging, Pneumocystis jirovecii pneumonia (PCP) is highly suggestive. Patients typically present with progressive dyspnea, mild to moderate fever, and hypoxia/cyanosis. Ground-glass changes on CT are classic for PCP, whereas Streptococcus pneumoniae usually causes more acute lobar consolidation. Mycobacterium tuberculosis often has a more chronic course, and Staphylococcus typically produces focal or cavitary lesions if severe.

**74.** (c) Neisseria meningitidis

Neisseria meningitidis commonly causes acute meningitis in young adults and can produce a characteristic petechial or purpuric rash over the trunk and extremities. Nuchal rigidity (meningeal irritation) plus rash are hallmark clues pointing to meningococcal infection. While S. pneumoniae is a leading cause of bacterial meningitis overall, it typically lacks the diffuse petechial rash. E. coli is more common in neonates, and H. influenzae meningitis incidence has dramatically decreased in the era of widespread Hib vaccination.

**75.** (a) Artesunate

Intravenous artesunate is recommended by the WHO as the first-line treatment for severe P. falciparum malaria in any trimester of pregnancy due to superior efficacy and lower risk of hypoglycemia compared to quinine. Although quinine was once the mainstay, it has been largely superseded by artesunate in modern guidelines. Chloroquine is useful only in chloroquine-sensitive regions (and for non-falciparum species in many cases), and IV quinidine is used far less frequently because of side effects and limited availability.

**76.** (a) Hypophosphatemia

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**35.** (c) Atrial emptying

In jugular venous pulse (JVP) tracings, the "Y" descent signifies the rapid emptying of the right atrium into the right ventricle once the tricuspid valve opens in early diastole. Atrial relaxation is the "x" descent, while atrial systole creates the "a" wave. The "Y" descent is most prominently seen when there is an unobstructed flow from the right atrium to the right ventricle (e.g., in constrictive pericarditis it is accentuated). It does not signify apical displacement of the tricuspid valve.

**36.** (c) Venous pulse has a single peak in each cardiac cycle

A normal jugular venous pulse often shows multiple deflections (the a, c, and v waves) rather than a single peak. Venous pulsations also vary with respiration, increase with abdominal compression (the hepatojugular reflux), and are generally not easily palpable, which helps differentiate them from arterial pulses. Claiming that the venous pulse has only one peak per cardiac cycle is incorrect, making option (c) the "NOT correct" statement.

**37.** (b) Postradiation pneumonitis

Eosinophilic lung infiltrates are seen in conditions like bronchial asthma, eosinophilic granulomatosis with polyangiitis (Churg-Strauss), and parasitic infections or allergic bronchopulmonary aspergillosis, which can complicate cystic fibrosis. Postradiation pneumonitis, however, usually reflects an inflammatory reaction with predominant damage to alveolar cells and interstitium, rather than a marked eosinophilic infiltration. Therefore, among the listed choices, postradiation pneumonitis is the one that does NOT typically present with pulmonary infiltrates featuring eosinophils.

**38.** (c) Pulmonary fibrosis

Pulmonary fibrosis is a restrictive lung disease characterized by thickening and scarring of the alveolar walls, leading to decreased compliance and reduced lung volumes, including a lowered total lung capacity (TLC). Asthma, chronic bronchitis, and emphysema are primarily obstructive lung diseases where TLC is usually normal or increased (especially in emphysema, where hyperinflation raises TLC). Thus, among the options, only pulmonary fibrosis consistently reduces the TLC.

**39.** (b) Increase in FEV1 $\geq$ 12 % following administration of inhaled bronchodilators

A classic diagnostic benchmark for reversible airway obstruction (as seen in asthma) is an FEV1 increase of at least 12% (and at least 200 mL in absolute terms) after administering a short-acting bronchodilator. This improvement demonstrates the reversibility component of obstructive airway disease. Exercise-induced bronchoconstriction and diurnal peak flow variability are supportive tests, but the "$\geq$12% rise in FEV1 post-bronchodilator" remains the key spirometric criterion commonly used to confirm bronchial hyperreactivity in clinical practice.

**40.** (c) Upper gastrointestinal bleeding

The Blatchford score (and its modified versions) is specifically designed to assess the severity of an upper GI bleed and determine the need for urgent intervention, such as endoscopic therapy or blood transfusion. The score considers parameters like hemoglobin level, blood urea, systolic blood pressure, pulse, presence of melena, hepatic disease, and heart failure. By stratifying patients based on risk, it helps clinicians prioritize endoscopic evaluation and treatment, reducing mortality and complications.

**41.** (c) 1 and 2

Proton pump inhibitors (PPIs) reduce gastric acid production, which can shift normal gut flora and predispose to infections. Long-term PPI therapy is associated with an increased risk of Clostridioides difficile colitis and may facilitate bacterial overgrowth that can aspirate into the lungs, increasing the incidence of community-acquired pneumonia. However, they are not typically implicated as a direct risk factor for urinary tract infections. Hence, the correct

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renal function, haematuria, proteinuria, and sometimes livedo reticularis or other embolic phenomena. Renal artery stenosis or infarction typically presents differently, and haemolytic uraemic syndrome has a characteristic triad of microangiopathic hemolysis, thrombocytopenia, and acute kidney injury, often in different clinical settings.

**56.** (c) 2, 3 and 4

Major contraindications to percutaneous renal biopsy include uncontrolled hypertension (due to bleeding risk), a solitary kidney (since losing or damaging the only functioning kidney is a severe complication), and coagulopathy (disordered coagulation greatly raises the risk of hemorrhage). Merely having a "normal size kidney" is not a contraindication. In fact, having very small kidneys can be a relative contraindication because it reduces diagnostic yield and increases the chance of complications, but normal-sized kidneys pose no such specific barrier.

**57.** (a) Anti-acetylcholine receptor antibody

The presence of anti-acetylcholine receptor antibodies is highly specific for Myasthenia gravis (MG). While repetitive nerve stimulation and the edrophonium (Tensilon) test are important, they are less specific and can be affected by examiner technique or other neuromuscular issues. In many patients with MG, especially those with generalized disease, a positive anti-ACh receptor antibody test nearly clinches the diagnosis. About 10–15% of MG patients may have anti-MuSK (muscle-specific kinase) antibodies instead, but anti-AChR positivity remains the most specific overall.

**58.** (b) Cerebrovascular disease

In the elderly, cerebrovascular disease (e.g., ischemic stroke, hemorrhage) is the most frequent cause of new-onset seizures or late-onset epilepsy. Infarcts can lead to areas of gliosis and irritative foci that predispose to seizure activity. While tumors, trauma, and degenerative conditions can also be responsible for seizures in older adults, vascular pathology remains the most prevalent factor. Proper evaluation often includes imaging to identify any acute or chronic ischemic or hemorrhagic lesions that might explain the seizures.

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**59.** (d) Claude syndrome

Claude syndrome is a midbrain stroke syndrome typically involving the red nucleus or adjacent structures, producing an ipsilateral oculomotor (CN III) palsy and contralateral cerebellar ataxia (due to disruption of the cerebellar outflow pathways in the midbrain). In contrast, Weber syndrome causes ipsilateral CN III palsy with contralateral hemiparesis, Wallenberg syndrome (lateral medullary) primarily affects CN V, VIII, IX, X pathways, and Parinaud syndrome involves vertical gaze palsy from dorsal midbrain involvement but not contralateral cerebellar signs.

**60.** (c) Optic tract

A lesion in the optic tract typically causes an incongruous contralateral homonymous hemianopia because fibers from both eyes (representing the contralateral visual field) are interrupted, yet they have not fully coalesced into the more congruent visual representation seen farther along in the visual pathway. A lesion in the optic radiation or occipital cortex tends to produce a more "congruous" field defect. Lesions of the optic nerve produce unilateral vision loss, while a chiasmal lesion classically produces bitemporal hemianopia.

**61.** (b) Post splenectomy

Common causes of macrocytosis (elevated MCV) include liver disease (often from alcohol-related injury and altered RBC membranes), hypothyroidism (mild macrocytosis can occur), and myelodysplastic syndrome (defective RBC maturation). While RBC inclusions (e.g., Howell-Jolly bodies) may appear after splenectomy, a pronounced or consistent macrocytosis is not typically a classic feature of "post-splenectomy" by itself. Hence, among these choices, "post-splenectomy" is the exception. However, mild macrocytosis can occasionally appear in splenectomized patients, but it is generally less recognized than in the other listed conditions.

**62.** (d) Haemolytic uraemic syndrome

increased with long-term immunosuppression. Consequently, patients receiving these therapies require careful monitoring for early detection of skin lesions or lymphoproliferative disorders.

**49.** (c) 1 and 3 only

Gastrinomas (as in Zollinger–Ellison syndrome) are suspected when peptic ulcers occur in unusual locations (e.g., distal duodenum or jejunum) and/or are especially severe, multiple, or recurrent, frequently leading to complications such as perforation or bleeding. H. pylori–related ulcers are common in typical anatomic sites (e.g., duodenum, proximal stomach), so the mere presence of H. pylori is not usually an indication to suspect a gastrinoma.

**50.** (c) 1, 3 and 4

Coeliac disease is strongly associated with dermatitis herpetiformis, an intensely pruritic rash linked to IgA deposition in the skin. It also correlates more typically with type 1 diabetes mellitus (autoimmune), not type 2. Turner syndrome has an increased incidence of coeliac disease, and selective IgA deficiency can coexist with coeliac disease. Awareness of these associations aids early investigation in at-risk groups.

**51.** (a) 1, 2 and 3

Classically, Whipple disease (caused by _ Tropheryma whipplei_) presents with chronic diarrhea, steatorrhea, weight loss, and migratory arthralgias/arthropathy. Although CNS or ocular involvement can occur, it is less universal than the GI and joint manifestations. The "classic triad" in many patients includes malabsorptive symptoms (steatorrhea), weight loss, and migratory arthralgias. Ocular and CNS findings, while possible, are not always considered "characteristic" at initial presentation—hence (a) is the best fit among the given options.

**52.** (d) 1, 2 and 3

Protein losing enteropathy leads to hypoalbuminemia, which frequently causes peripheral edema. Depending on the underlying pathology (e.g., intestinal lymphangiectasia or severe mucosal disease), patients can present with diarrhea and steatorrhea if malabsorption also coexists. Laboratory findings typically show a marked reduction in serum albumin; serum globulins may be relatively preserved or variably affected, but often the notable feature is disproportionately low albumin compared to globulin. All three listed features can be seen in protein losing enteropathy.

**53.** (d) 1 only

About 5–10 % of patients with IBD (especially ulcerative colitis) may develop a spondyloarthropathy resembling ankylosing spondylitis. However, the axial (spinal/sacroiliac) involvement typically does not fluctuate strictly with bowel disease activity. Peripheral arthritis in IBD can mirror bowel flares, but true "AS-like" disease often follows a more independent course and does not reliably remit with colectomy or glucocorticoids aimed at the colitis. Thus, only statement 1 is correct for classic AS in the context of IBD.

**54.** (d) 1, 2 and 3

Certain diagnostic or interventional radiological procedures can result in:

1. Contrast-induced nephropathy (especially in patients with diabetes or pre-existing renal impairment)
2. Atheroembolism (cholesterol embolization) if atherosclerotic plaques are dislodged during catheterization
3. Nephrogenic systemic fibrosis (NSF), formerly called nephrogenic fibrosing dermopathy, triggered by gadolinium-based contrast in individuals with renal failure, causing sclerosing changes in skin and other tissues.

Hence, all three listed entities are recognized renal-related complications.

**55.** (c) Atheroembolism

After angiographic procedures (especially in older, atherosclerotic individuals), dislodged cholesterol crystals can migrate to small renal arterioles, causing cholesterol atheroembolism (or "atheroembolic renal disease"). This can present acutely or subacutely with deteriorating

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requires that the same organism _can_ indeed be recovered from the newly infected host.

**28.** (c) Vitamin D toxicity

Huntington's disease leads to a progressive dementia and movement disorder, while Alzheimer's disease is the most common cause of dementia in older adults. Thiamine deficiency can cause Wernicke–Korsakoff syndrome, leading to severe memory dysfunction and confusion, often considered within the spectrum of dementia-like syndromes. By contrast, Vitamin D toxicity is not known to produce a primary dementia syndrome, although it can cause other metabolic disturbances.

**29.** (a) 1–2 ng/ml

Digoxin has a relatively narrow therapeutic index, and levels generally in the range of 0.5–2 ng/mL are considered therapeutic. Above that range, the risk of digoxin toxicity (manifesting with cardiac arrhythmias, gastrointestinal symptoms, and neurological disturbances) increases significantly. Monitoring serum digoxin concentration, along with checking electrolytes (particularly potassium) and renal function, is essential for patients on long-term therapy to ensure safety and efficacy.

**30.** (d) AV reentry tachycardia

A narrow QRS tachycardia (QRS duration <120 ms) typically indicates supraventricular origin. Sudden onset palpitations with a regular narrow QRS rhythm are most often due to AV nodal reentrant tachycardia (AVNRT) or an AV reentry involving an accessory pathway (AVRT). "Pre-excited tachycardia" usually indicates a pathway like in WPW syndrome and may show a wide QRS unless it conducts orthodromically. Ventricular tachycardia usually shows a wide QRS, and "PSVT with aberrancy" also typically has wider QRS morphology.

**31.** (b) 2 and 3

In acute pulmonary edema, the patient is typically placed in an upright position (not supine) to decrease venous return and reduce pulmonary congestion. High-flow oxygen (if hypoxic) and intravenous loop diuretics (like furosemide) are mainstays of initial treatment. Nitrates (e.g., sublingual or IV nitroglycerin) are also often employed to reduce preload and afterload, improving symptoms. Therefore, "Give high flow, high concentration oxygen" and "Administer Furosemide intravenously" are correct measures, but statements 1 and 4 are incorrect.

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**32.** (b) Hyperkalaemia

Hypomagnesemia often predisposes to torsade de pointes by prolonging the QT interval. Certain drugs like macrolide antibiotics (e.g., erythromycin) or antiarrhythmics (e.g., amiodarone) can also prolong the QT interval. Hyperkalaemia, on the other hand, typically causes peaked T waves, widened QRS, and can shorten the QT interval rather than prolong it. It can progress to dangerous arrhythmias, but does not produce a classic QT prolongation.

**33.** (c) Rheumatic fever

Rheumatic fever can present with migratory polyarthritis (often affecting large joints like knees and ankles), fever, and cardiac involvement. Prolongation of the PR interval on ECG suggests possible carditis or conduction abnormalities, both of which fit with rheumatic fever. Although a preceding sore throat (Group A strep infection) is classic, it may be absent in some patients. Splenomegaly can occur in various systemic illnesses but does not exclude rheumatic fever. In India, rheumatic fever remains a relatively common cause of such findings.

**34.** (c) Left heart failure

Acute left-sided heart failure (often manifesting as acute pulmonary edema) is suggested by rapid onset dyspnea, orthopnea, bibasilar crackles (crepitations), and a low blood pressure with a weak, rapid pulse. Right-sided failure typically presents with jugular venous distension and peripheral edema. Mitral stenosis/endocarditis and constrictive pericarditis have different hemodynamic profiles, usually without acute diffuse crepitations. In a diabetic patient, ischemic heart disease leading to left ventricular dysfunction is a common precipitant of acute heart failure symptoms.

Microcytic, hypochromic anemias are typically due to reduced hemoglobin synthesis (iron deficiency, thalassemia, anemia of chronic disease, sideroblastic anemia). Thalassemias involve defective globin chains, anemia of chronic disease can limit iron availability, and sideroblastic anemia features abnormal heme synthesis. By contrast, haemolytic uraemic syndrome (HUS) causes a normocytic hemolytic anemia with schistocytes due to microangiopathic destruction, not a microcytic process.

**63.** (a) Glucocorticoids

Glucocorticoids typically cause neutrophilia by demargination of neutrophils from the vessel walls, not neutropenia. In contrast, propylthiouracil (PTU), dapsone, and certain ACE inhibitors (like enalapril, though less commonly) can cause agranulocytosis or neutropenia through immune-mediated or toxic mechanisms. Physicians monitor white cell counts in patients starting PTU or dapsone to detect early signs of agranulocytosis.

**64.** (d) Herpes simplex

In the initial post-transplant period (first 4 weeks), Herpes simplex virus (HSV) reactivation is a known early infectious complication, especially in seropositive individuals who become immunosuppressed. Cytomegalovirus, Pneumocystis jirovecii, and Varicella zoster typically emerge later (beyond 1 month) when cell-mediated immunity is more profoundly affected or as prophylactic measures wane. Recognizing the typical timeline of post-transplant infections assists in targeted prophylaxis and early empirical treatment if infections arise.

**65.** (d) 1, 2 and 3

Vitamin B12 deficiency affects both the central and peripheral nervous systems, leading to a spectrum of neurological and neuropsychiatric issues. Poor memory or cognitive impairment, optic atrophy (progressive vision loss), and personality changes (or even depression, psychosis) can all occur. Subacute combined degeneration involves the dorsal columns (loss of vibration and proprioception) and lateral corticospinal tracts. Early recognition and B12 repletion can reverse or halt many of these neurologic deficits if treated promptly.

**66.** (b) Malaria

Cold agglutinin–mediated hemolysis commonly involves Mycoplasma pneumoniae infection (classic association), Infectious mononucleosis (Epstein-Barr virus), and occasionally syphilis. The immune response generates IgM antibodies that bind RBCs at low temperatures, leading to complement-mediated hemolysis. Malaria causes hemolysis through direct parasitic destruction of red cells and immunologic mechanisms, but it is not typically associated with cold agglutinins.

**67.** (d) 24 hours urinary fractionated metanephrines and catecholamines

When diagnosing pheochromocytoma, the most sensitive biochemical tests measure fractionated metanephrines (either in plasma or 24-hour urine). Elevated metanephrines reflect continuous catecholamine turnover by the tumor. Imaging studies like MIBG (metaiodobenzylguanidine) scintigraphy are crucial for tumor localization but are less sensitive for the initial diagnosis. Somatostatin receptor imaging or PET scans (e.g., 18F-FDOPA) can also help localize difficult cases, but the high-sensitivity screening hinges on measuring fractionated metanephrines and catecholamines.

**68.** (c) Hypoparathyroidism

Polyuria arises from either osmotic diuresis or impaired water reabsorption in the kidneys. Diabetes mellitus causes osmotic diuresis (glucosuria). Diabetes insipidus (central or nephrogenic) impairs the kidney's ability to concentrate urine. Conn syndrome (primary hyperaldosteronism) can lead to some degree of polyuria (and hypokalemia) through changes in renal handling of electrolytes. Hypoparathyroidism, however, is not typically associated with polyuria. Low calcium does not create a direct osmotic or anti-ADH effect that produces marked polyuria.

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a classic signature of portal hypertensive ascites. SAAG <1.1 g/dL usually indicates non-portal hypertensive causes such as malignancy or tuberculosis.

14. (d) Bronchial Asthma

Interstitial lung diseases (ILDs) are a broad group of disorders characterized by inflammation and fibrosis of the pulmonary interstitium. Idiopathic pulmonary fibrosis, granulomatosis with polyangiitis (formerly Wegener's granulomatosis), and sarcoidosis all produce characteristic patterns of interstitial involvement. Bronchial asthma, however, is an obstructive airway disease involving bronchial hyperreactivity and reversible airflow limitation rather than diffuse parenchymal infiltration. Asthma does not primarily affect the alveolar or interstitial compartments, so it is excluded as a cause of ILD.

15. (c) 8 to 13 Hz – Alpha rhythm

Alpha waves on an electroencephalogram (EEG) typically range from 8 to 13 Hz and are characteristically seen when a relaxed adult is awake with eyes closed. This pattern, most prominent in the occipital region, diminishes or disappears when the individual opens their eyes or engages in mental activity. Slower frequencies (delta <4 Hz and theta 4–7 Hz) are usually associated with sleep or drowsiness, while higher-frequency beta waves (>14 Hz) reflect active concentration or alertness.

16. (c) Ophthalmic artery

Transient monocular blindness (amaurosis fugax) usually arises from an embolus to the central retinal artery or one of its branches, which stem from the ophthalmic artery. Patients often describe a sudden "curtain coming down" over the field of vision in one eye. Platelet-fibrin or cholesterol emboli typically originate from atherosclerotic plaques in the carotid arteries or the heart. Because the ophthalmic artery directly supplies the retina via the central retinal artery, any brief occlusion can interrupt blood flow and cause temporary vision loss.

17. (a) middle and posterior cerebral artery

The macular region of the visual cortex often has a dual blood supply from both the posterior cerebral artery (PCA), which primarily supplies the occipital lobe, and branches of the middle cerebral artery (MCA). In the event of a PCA infarction, this collateral circulation can help preserve the macular (central) vision area, leading to "macular sparing." This is a notable clinical finding: patients with occipital lobe infarcts may lose peripheral vision but retain central vision because the macular cortex is less severely affected.

18. (a) partial ptosis, enophthalmos, constricted pupil, decreased sweating

Horner's syndrome arises from disruption of the sympathetic pathways to the head. Classic clinical findings include a slight drooping of the upper eyelid (partial ptosis), an inwardly sunken appearance of the eyeball (enophthalmos), a constricted pupil (miosis), and reduced sweating (anhidrosis) on the affected side of the face. These signs result from decreased sympathetic stimulation. Notably, "exophthalmos" and a "dilated pupil" are incompatible with sympathetic interruption.

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19. (c) Spinal cord ends at lower level of 5th lumbar vertebrae

In an adult, the spinal cord typically terminates at around the level of the L1–L2 vertebrae (conus medullaris). The dorsal columns (fasciculus gracilis and fasciculus cuneatus) carry fine touch, vibration, and proprioception and synapse in their respective nuclei in the medulla. The lateral spinothalamic tract indeed transmits pain and temperature. The dorsal spinocerebellar tract carries proprioceptive information ipsilaterally to the cerebellum. Therefore, stating that the cord ends at the L5 vertebra is incorrect.

20. (b) Myotonia dystrophica

Duchenne's and Becker muscular dystrophies are well-known for predominantly proximal muscle weakness (e.g., pelvic girdle). Facio-scapulo-humeral dystrophy also involves the shoulder girdle muscles (a "proximal" pattern in the upper limbs), though it is distinct in also affecting facial muscles. Myotonia dystrophica

Refeeding syndrome occurs when a malnourished patient is refed (especially with carbohydrates). Insulin secretion increases and drives phosphate, potassium, and magnesium into cells for use in metabolic pathways, leading to hypophosphatemia (the hallmark feature), as well as potential hypokalemia and hypomagnesemia. This can precipitate respiratory failure, arrhythmias, or neuromuscular dysfunction. Recognizing and carefully correcting electrolyte deficits is essential in at-risk individuals, such as chronic alcoholics or those with prolonged starvation.

**77.** (d) Obese

BMI is calculated as weight (in kg) divided by height squared (in meters). For this patient, height is 1.5 m, so BMI = 80 kg / $(1.5\ m)^2$ = 80 / 2.25 $\approx$ 35.5. A BMI $\geq$ 30 is classified as obese. Standard BMI categories are: underweight < 18.5, normal weight 18.5–24.9, overweight 25–29.9, and obese $\geq$ 30.

**78.** (b) 1, 2 and 4

Angular stomatitis and cheilosis (inflammation at the corners of the mouth and chapped/fissured lips) are most characteristically seen with riboflavin (vitamin B2) deficiency, but can also occur in pyridoxine (vitamin B6) and niacin (vitamin B3) deficiencies. Thiamine (vitamin B1) deficiency manifests primarily as beriberi or Wernicke–Korsakoff syndrome, and does not typically present with cheilosis. Thus, the relevant vitamins for angular stomatitis and cheilosis among the options given are B2, B6, and B3 (listed in question as 1, 2, and 4).

**79.** (d) 1, 2 and 3

Early-onset osteoarthritis often appears prior to age 55 and is commonly linked to a specific cause such as trauma or repetitive mechanical stress. This leads to secondary OA, which usually affects a single joint or a limited number of joints rather than the more generalized presentation typical of older adults with primary OA. Thus, all three listed points—onset younger than 55, a history of trauma or injury, and involvement often limited to a single joint—are characteristic features.

**80.** (c) Reactive arthritis

Reactive arthritis is an aseptic inflammatory condition triggered by an extra-articular infection (often genitourinary or gastrointestinal), leading to arthritis after the inciting organism is cleared. This patient's sterile joint culture, history of recent UTI, inflammatory synovial fluid with multinucleated macrophages, plus low back involvement are consistent with a spondyloarthropathy (reactive arthritis). Septic arthritis usually has a positive culture or direct organism detection. Crystal arthritis has characteristic crystals on microscopy, and Still's disease has its own distinct systemic features and rash.

**81.** (a) 1 and 2 only

In older adults, gout is often precipitated by reduced renal function, chronic kidney disease, or diuretic use, and these patients may have more atypical joint involvement, including upper limb joints or polyarticular patterns. Statement 3 is _not_ always true—elderly-onset gout can present more indolently, without the classic acute podagra. Thus, while (1) and (2) accurately reflect common features of gout in the elderly, (3) is not consistently seen.

**82.** (c) Rheumatoid arthritis

Bilateral, symmetrical involvement of the MCP, PIP, and wrist joints for more than six weeks is highly suggestive of rheumatoid arthritis (RA). By contrast, osteoarthritis typically affects the distal interphalangeal joints (DIPs) and can be asymmetrical or less inflammatory. Ankylosing spondylitis commonly presents with spinal and sacroiliac joint involvement. While lupus can have polyarthritis, RA's classic hallmark is persistent inflammatory arthritis in the MCP and PIP joints bilaterally.

**83.** (d) 1, 2 and 4

RA can lead to peripheral entrapment neuropathies (e.g., carpal tunnel syndrome), atlantoaxial subluxation (which can endanger the spinal cord), and increased risk of lymphoma (particularly with chronic inflammation).

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However, RA is classically associated with secondary (AA) amyloidosis, not primary (AL) amyloidosis. Hence, statement 3 is inaccurate when it says "primary" amyloidosis. Therefore, 1, 2, and 4 are known complications of RA.

**84.** (c) Secukinumab

Secukinumab is a monoclonal antibody targeting IL-17A, used in the management of psoriasis, psoriatic arthritis, and ankylosing spondylitis. Infliximab and Etanercept target TNF-α, while Ustekinumab targets IL-12/23. IL-17A inhibition helps block a key pro-inflammatory cytokine pathway implicated in certain autoimmune and autoinflammatory conditions.

**85.** (b) Lithium

Lithium remains the cornerstone (mainstay) of treatment for bipolar disorder. It is effective both in acute mood episodes (particularly mania) and in long-term prophylaxis against manic and depressive relapses. Although anticonvulsants (e.g., valproate, carbamazepine) and certain atypical antipsychotics (e.g., risperidone, olanzapine) are also used, lithium's mood-stabilizing efficacy and well-studied track record make it pivotal for many patients. Regular monitoring of lithium levels, renal function, and thyroid status is essential to minimize toxicity while maintaining therapeutic benefits.

**86.** (b) Left conductive deafness

In the Weber test, a tuning fork placed on the forehead or vertex lateralizes to the ear with a conductive deficit or away from an ear with sensorineural loss. If the sound is perceived in the left ear, this suggests either left-sided conductive deafness (sound is "trapped" and heard better) or right-sided sensorineural deafness (the left cochlea is relatively better). Among the provided options, left conductive hearing loss is most consistent with lateralization of the tone to the left ear.

**87.** (d) Inferior frontal gyrus

Markedly reduced speech output with intact comprehension is characteristic of Broca's aphasia, which arises from a lesion in the inferior frontal gyrus (usually the dominant hemisphere, often the left). Patients typically have halting, effortful speech but understand spoken language relatively well. This contrasts with Wernicke's aphasia (posterior temporal lobe), which produces fluent but nonsensical speech and poor comprehension. Involvement of the cerebellum or midbrain does not typically produce a classic aphasia syndrome of this nature.

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**88.** (b) Lower motor neuron disease

Hallmarks of lower motor neuron (LMN) disease include muscle atrophy, reduced or absent deep tendon reflexes, and the absence of pathologic reflexes such as Babinski sign (which is an upper motor neuron sign). In LMN lesions, damage to the anterior horn cells, nerve roots, or peripheral nerves leads to flaccid weakness and significant muscle wasting. Upper motor neuron lesions generally exhibit increased tone, hyperreflexia, and Babinski positivity. Cerebellar disorders cause ataxia, while psychogenic weakness would not typically show significant atrophy or reflex changes.

**89.** (d) Infectious mononucleosis

Infectious mononucleosis (often caused by Epstein–Barr virus) typically presents with fever, lymphadenopathy (especially posterior cervical nodes), and hepatosplenomegaly. A notable feature is that patients with undiagnosed mononucleosis who receive aminopenicillins (like ampicillin) often develop a characteristic, diffuse maculopapular rash. Measles usually has a prodrome of cough, coryza, conjunctivitis, and characteristic Koplik spots, while dengue can have a different rash and lacks the classic lymphadenopathy/splenomegaly pattern. Drug rash alone is less likely given the systemic findings.

**90.** (b) Allodynia

"Allodynia" refers to pain provoked by stimuli that do not ordinarily cause pain, such as a light touch on the skin. This occurs due to heightened sensitivity or misprocessing of sensory signals in peripheral or central pathways. "Hyperalgesia" is an exaggerated response to a stimulus that is normally painful, "analgesia" is absence

of pain perception, and "sensitization" is the more general process that can increase pain responsiveness. Among these choices, allodynia specifically describes innocuous stimuli being perceived as painful.

**91.** (a) 1, 2, 3 and 4

Frailty is a multifaceted syndrome in older adults, marked by decreased physiologic reserves and increased vulnerability to stressors. Key features include changes in body composition (often sarcopenia), homeostatic dysregulation (poorer capacity to maintain equilibrium), energetic failure (fatigue, low physical endurance), and neurodegenerative processes (cognitive decline or neurological deficits). All four listed domains can be affected as part of frailty's complex pathophysiology, contributing to heightened risk of falls, hospitalizations, and mortality.

**92.** (c) High pre systemic metabolism

Nitroglycerin undergoes extensive first-pass metabolism in the liver, greatly reducing its oral bioavailability. This is why it is routinely administered sublingually, transdermally, or via other non-oral routes to bypass hepatic clearance. The "high presystemic metabolism" (first-pass effect) means very little active drug reaches systemic circulation if given as a standard oral tablet. Hence, sublingual nitroglycerin is the classic acute treatment for angina because it quickly enters the bloodstream, avoiding first-pass inactivation.

**93.** (c) Thiamine

Confabulation (fabrication of memories without conscious intent to deceive) is a hallmark of Korsakoff's psychosis, which often follows Wernicke's encephalopathy in the setting of thiamine (vitamin B1) deficiency, most frequently seen in alcohol use disorder. Wernicke–Korsakoff syndrome features acute confusion, ophthalmoplegia, ataxia (Wernicke's), and later memory impairment with confabulation (Korsakoff's). Niacin deficiency causes pellagra (dermatitis, diarrhea, dementia), and folic acid or zinc deficiency are not characteristically linked to confabulation.

**94.** (d) Sea snake

Sea snake envenomation is notorious for causing severe muscle damage (myotoxicity), leading to generalized myalgias, rhabdomyolysis (elevated CK, dark urine), and neuromuscular paralysis (flaccid weakness). Cobra and krait bites primarily cause neurotoxic paralysis, while Russell's viper venom is predominantly vasculotoxic/hemotoxic. The combination of rhabdomyolysis with progressive paralysis fits best with sea snakes, whose venom is strongly myotoxic and can rapidly produce life-threatening complications if antivenom is not administered promptly.

**95.** (b) Decrease

Some first-line antitubercular drugs, notably rifampicin, induce hepatic cytochrome P450 enzymes, accelerating the metabolism of many medications, including warfarin. As a result, warfarin levels can drop, reducing its anticoagulant effect. The patient then becomes at higher risk of thrombotic events unless warfarin dosing is adjusted upward. Regular monitoring of prothrombin time/INR is essential in patients who begin enzyme-inducing therapies while on warfarin.

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**96.** (c) Retrograde amnesia

Wernicke's syndrome, caused by thiamine (vitamin B1) deficiency, is classically described by the triad of confusion/encephalopathy, ataxia, and ophthalmoplegia (or nystagmus). Korsakoff's psychosis, which may follow Wernicke's, features severe anterograde amnesia, possible retrograde amnesia, and confabulation. However, the "Wernicke's" component itself does not center on retrograde amnesia as a key sign. Therefore, among these choices, retrograde amnesia is not part of the classic Wernicke's triad.

**97.** (a) $\geq$60 beats per minute

In neonatal resuscitation guidelines, chest compressions are indicated if the infant's heart rate remains below 60 bpm despite adequate ventilation. Once the heart rate rises to $\geq$60 bpm, chest compressions can typically be stopped, although other supportive measures

# QUESTION PAPER 2018

1. Most common valve involved in Carcinoid syndrome is:
   (a) Mitral valve
   (b) Tricuspid valve
   (c) Aortic valve
   (d) Pulmonary valve

2. A 70 year old man reports to the emergency with acute chest pain. ECG shows inferior wall Myocardial Infarction (MI). He has recently been discharged 7 days back following thrombolysis with streptokinase for Acute Anterior wall MI. What will be the appropriate management?
   (a) Aspirin, Sublingual nitroglycerin, Clopidogrel, Primary PCI
   (b) Aspirin, Sublingual nitroglycerin, Clopidogrel, Streptokinase
   (c) Aspirin, Sublingual nitroglycerin, Clopidogrel, Heparin
   (d) Aspirin, Sublingual nitroglycerin, Clopidogrel, Beta blockers

3. The presence of a fusion beat on an Electrocardiogram is diagnostic of:
   (a) Atrial Fibrillation
   (b) Ventricular Tachycardia
   (c) Supraventricular Tachycardia
   (d) Sinus Bradycardia

4. A 64 year old man presents with chest pain of 24 hours duration. His ECG reveals ST elevation, Anterior Wall Myocardial Infarction. The preferred treatment modality for him is:
   (a) Primary percutaneous coronary intervention
   (b) Thrombolysis with Alteplase
   (c) Thrombolysis with Streptokinase
   (d) Nitroglycerin infusion , Aspirin and Beta blockers

5. The preferred anti hypertensive drug for a 74 year old male with benign prostatic hypertrophy is:
   (a) Amlodepine
   (b) Hydrochlorothiazide
   (c) Prazosin
   (d) Atenolol

6. The treatment of choice for a 32 year old male patient of severe mitral stenosis (Rheumatic) with thickened and calcified valves on echocardiography is:
   (a) Balloon valvuloplasty
   (b) Mitral valve replacement
   (c) Medical management only
   (d) Mitral valvotomy

7. Which one of the following is an example of Type-IV respiratory failure?
   (a) Bronchial asthma
   (b) Pulmonary embolism
   (c) COPD
   (d) Shock

8. All of the following are seen in Polyarteritis Nodosa EXCEPT:
   (a) Glomerulonephritis
   (b) Peripheral Neuropathy
   (c) Bowel Infarction
   (d) Pericarditis

9. All of the following are the pointers to organic cause of psychiatric disease EXCEPT:
   (a) Late age of onset of psychiatric illness
   (b) No previous history of psychiatric illness
   (c) Family history of psychiatric illness
   (d) No apparent psychological precipitant

10. All of the following are Long Acting Beta Agonists (LABA) EXCEPT:
    (a) Levo salbutamol
    (b) Salmeterol

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acetylcholine receptors. Pralidoxime (2-PAM) is also used to help restore acetylcholinesterase function by cleaving the phosphorylated enzyme complex if administered early. Physostigmine is actually an acetylcholinesterase inhibitor (would worsen OP poisoning), naloxone reverses opioids, and sodium bicarbonate is used in specific toxicologic/metabolic scenarios but not as the first-line for OP poisoning.

**105.** (c) 2 years

When assessing growth and developmental milestones in preterm infants, clinicians adjust for prematurity by using the corrected (post-conceptional) age rather than the chronological age. Typically, this correction is recommended up to about 2 years of age. By this point, many premature infants have "caught up" to their peers in terms of motor and cognitive development, and the need for ongoing adjustment of age usually decreases. After 2 years, milestones are generally interpreted with the standard charts for chronological age.

**106.** (c) Intake of Phenytoin

Neural tube defects (NTDs) are strongly linked to poor glycemic control in diabetic mothers, radiation exposure, and maternal folate deficiency. Certain anticonvulsants (most notably valproic acid and carbamazepine) also heighten NTD risk. While phenytoin can cause fetal hydantoin syndrome with craniofacial and nail anomalies, it is less classically associated with an increased incidence of spina bifida compared with valproate. Therefore, among these listed options, (c) intake of phenytoin is not recognized as a major risk factor for NTDs.

**107.** (b) Patau syndrome

Trisomy 13, termed Patau syndrome, features severe craniofacial anomalies, polydactyly, cardiac defects, and profound developmental impairment. Trisomy 18 is known as Edwards syndrome, and Turner syndrome (45,X) affects females with short stature, streak ovaries, and webbed neck, but no extra chromosome. Williams syndrome is a deletion on chromosome 7 (elastin gene). Thus, "Patau syndrome" is the correct eponym for Trisomy 13.

**108.** (a) Andersen disease

Andersen disease (GSD IV) is a glycogen storage disease caused by a defect in the branching enzyme, leading to abnormal glycogen structure (amylopectinosis). Gaucher disease is a sphingolipidosis due to glucocerebrosidase deficiency; Krabbe disease is a leukodystrophy due to galactocerebrosidase deficiency; Sandhoff disease is another sphingolipidosis affecting β-hexosaminidase. Only Andersen disease among the listed options is a classical glycogen storage disorder.

**109.** (b) Pregnancy associated plasma protein A

A common first-trimester screening protocol (around 11–13 weeks) for chromosomal abnormalities (e.g., Down syndrome) includes measuring PAPP-A (Pregnancy-Associated Plasma Protein A) and free β-hCG alongside nuchal translucency on ultrasound. AFP, unconjugated estriol, and inhibin A typically feature in the second-trimester triple or quadruple test. Elevated or decreased levels of PAPP-A and β-hCG, combined with ultrasound findings, guide the risk assessment for aneuploidies such as Trisomy 21.

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**110.** (b) Cryptophthalmos

1. Anophthalmos: absence of the eye.
2. Microphthalmos: an abnormally small eye.
3. Nanophthalmos: a rare form of small eye with a normal lens but reduced axial length.

These involve global defects in overall eyeball formation. In contrast, cryptophthalmos is primarily a severe eyelid malformation (the eyelids fail to separate, leaving the globe covered by skin). While the globe may be variably affected, the fundamental defect is more about eyelid development rather than the entire eyeball organogenesis.

**111.** (a) The upper part of the esophagus ends blindly and the lower end is connected to the trachea by a fistula

In about 85–90% of cases, the most common variant (Type C) of tracheoesophageal fistula (TEF) involves a blind-ending upper esophageal pouch and a fistula connecting the lower

(especially adequate ventilation) may still be required until the heart rate surpasses 100 bpm. The threshold of 60 bpm distinguishes profound bradycardia necessitating compressions from mere respiratory support or positive-pressure ventilation for moderately low heart rates.

**98.** (c) Rectal suction biopsy

Failure to pass meconium, abdominal distension, and explosive stool on rectal examination strongly suggest Hirschsprung disease (congenital aganglionic megacolon). The definitive diagnostic test is a rectal suction biopsy, which identifies the absence of ganglion cells (enteric nervous system cells) in the submucosal (Meissner) and myenteric (Auerbach) plexuses. While anorectal manometry and contrast studies can be helpful screening tools, the gold-standard for confirming Hirschsprung disease is demonstrating the lack of ganglion cells on a rectal biopsy.

**99.** (d) Reduction in hyperbilirubinemia

Delayed umbilical cord clamping confers several hematologic benefits to the newborn: higher hemoglobin/hematocrit, increased iron stores, and a lower incidence of iron-deficiency anemia in early infancy. It may also slightly heighten the risk of hyperbilirubinemia because of the greater red blood cell mass that eventually breaks down. Therefore, reduced hyperbilirubinemia is not typically an advantage of delayed clamping; in fact, it may lead to mildly increased bilirubin levels in some infants.

**100.** (d) Initial steps of neonatal resuscitation

Current neonatal guidelines advise that even with meconium-stained fluid, if the newborn has depressed respiration (i.e., is not vigorous), one should proceed with the standard steps of neonatal resuscitation (warming, drying, clearing the airway as needed, assessing breathing/heart rate) rather than automatically intubating or suctioning below the cords. Routine intrapartum or immediate postnatal tracheal suctioning of non-vigorous infants has not shown clear benefit and can delay essential ventilation. Thus, the priority is to follow the initial resuscitation algorithm.

**101.** (b) Triangle

Developmental drawing milestones follow a general sequence: a 3-year-old can copy a circle; by 4 years, a cross (or plus sign); and by about 5 years, a triangle. Children progress from simpler shapes (circles, crosses) to more complex figures (triangles, squares, and rectangles) as their motor coordination and visual-spatial skills improve. While a 3-year-old might scribble circles, a child of 5 typically can manage the three straight sides of a triangle, making (b) the best match.

**102.** (c) Drowsiness after the episode

Breath holding spells are brief episodes in children triggered by emotional upset or pain, leading to apnea (holding breath), possible cyanosis or pallor, and sometimes brief myoclonic or stiffening movements (anoxic "seizure-like" activity). However, children typically recover quickly once normal breathing resumes and do not show a prolonged "postictal" drowsy state. Marked drowsiness or confusion afterward would be atypical for a simple breath holding spell and instead suggests a true seizure or another etiology.

**103.** (c) Cholinergic

Organophosphate compounds inhibit acetylcholinesterase, causing an excessive accumulation of acetylcholine at muscarinic and nicotinic receptors. The resulting cholinergic toxidrome is characterized by the classic "DUMBELS" or "SLUDGE" symptoms (Salivation, Lacrimation, Urination, Defecation, Gastrointestinal distress, Emesis, and so forth) plus muscle weakness, fasciculations, and respiratory failure. Adrenergic and serotonergic toxidromes have different clinical profiles, and hypnotic overdose typically causes CNS depression rather than the hypersecretory state seen with cholinergic overactivity.

**104.** (a) Atropine

Atropine, a muscarinic antagonist, is the mainstay antidote for organophosphate poisoning. It counteracts the muscarinic overstimulation (excessive secretions, bronchospasm, bradycardia) by blocking

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Hence, the comprehensive workup usually includes all three investigations in this scenario.

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**119.** (d) MMR

Mission Indradhanush in India aims to increase vaccine coverage against certain key diseases. It traditionally includes vaccines such as BCG, OPV (oral polio vaccine), DPT (diphtheria-pertussis-tetanus), measles, hepatitis B, Hib, and some region-specific vaccines (e.g., Japanese encephalitis). MMR (measles-mumps-rubella) is not part of the standard list under Mission Indradhanush. Instead, the universal schedule has measles (or measles-rubella in some programs), but typically not the triple-valent MMR.

**120.** (d) Trientine

Standard pharmacotherapy for ADHD includes stimulants (e.g., amphetamine salts, methylphenidate) and non-stimulant agents such as atomoxetine. Trientine, on the other hand, is a copper-chelating agent used primarily in managing Wilson's disease. It has no role in the treatment of ADHD. Thus, among the options given, trientine is the one not employed in ADHD management.

END

**21.** Which one of the following arteries is involved in causation of lateral medullary syndrome?
(a) Anterior superior cerebellar artery
(b) Anterior inferior cerebellar artery
(c) Posterior superior cerebellar artery
(d) Posterior inferior cerebellar artery

**22.** A right handed 70 year old man has a brain scan which reveals a lesion that has damaged his left angular and supramarginal gyrus. On examination, one would expect the following EXCEPT:
(a) Difficulty with left to right discrimination
(b) Inappropriate affect
(c) Finger agnosia
(d) Inability to write

**23.** Total iron binding capacity of more than 360 μg/dl is seen in anemia due to:
(a) Chronic inflammation
(b) Hemoglobinopathies
(c) Sideroblastic anemia
(d) Iron deficiency anaemia

**24.** Escape behaviour with paroxysmal occurrence is seen in:
(a) Phobic disorder
(b) Anxiety disorder
(c) Obsessive compulsive disorder
(d) Panic disorder

**25.** Which of the following conditions are associated with prolonged prothrombin time?
1. Factor VIII deficiency
2. Factor VII deficiency
3. Heparin anticoagulation
4. Warfarin anticoagulation

Select the correct answer using the code given below:
(a) 1 and 4
(b) 1 and 3
(c) 2 and 3
(d) 2 and 4

**26.** Syndrome X includes:
(a) Hyperlipidemia, Obesity, Type-2 DM
(b) Obesity, CAD, COPD
(c) Hyperlipidemia, Hyperuricemia with CAD
(d) Hyponatremia, Hyperlipidemia with type-2 DM

**27.** Growth hormone secretion is inhibited by:
(a) Arginine
(b) Glucose
(c) Clonidine
(d) L-Dopa

**28.** Which one of the following drugs causes hypercalcemia?
(a) Phenytoin
(b) Heparin
(c) Lithium
(d) Furosemide

**29.** All of the following insulins are longer acting EXCEPT:
(a) Glargine
(b) Degludec
(c) Glulisine
(d) Detemir

**30.** The presence of vitiligo on examination suggests an associated:
(a) Autoimmune disease
(b) Degenerative disease
(c) Infection
(d) Malignancy

**31.** A mildly elevated TSH (5–20 mU/L) along with a normal T3 and normal T4 levels is suggestive of :
(a) Primary hypothyroidism
(b) Subclinical hypothyroidism
(c) Artefact
(d) Thyroid hormone resistance

**32.** Which one of the following suggests patient to be prediabetic?
(a) HbA1c 5.6%, FPG 126 mg/dL
(b) HbA1c 6%, FPG 130 mg/dL

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(c) Formoterol
(d) Indacaterol

**11.** Deficiency of which immune function results in tubercular infections?
(a) Defective phagocytic function
(b) Defect in T cell function
(c) Defect in B cell function
(d) Defect in antibody productivity

**12.** The most common agent responsible for community acquired pneumonia is:
(a) Streptococcus pneumoniae
(b) Mycoplasma pneumoniae
(c) Staphylococcus aureus
(d) Legionella haemophilia

**13.** A 26 year old woman presents with fever, arthralgia and erythema nodosum. Her chest X-ray reveals bilateral hilar lymphadenopathy. Her mantoux test is negative. The most likely diagnosis is:
(a) Tuberculosis
(b) Allergic bronchopulmonary aspergillosis
(c) Sarcoidosis
(d) Pulmonary thromboembolism

**14.** Which of the following are the characteristics of Exudative pleural effusion?
1. Pleural fluid protein/serum protein 0.5
2. Pleural fluid protein/serum protein < 0.5
3. Pleural fluid LDH/serum LDH 0.6
4. Pleural fluid LDH/serum LDH < 0.6

Select the correct answer using the code given below:
(a) 1 and 3
(b) 1 and 4
(c) 2 and 3
(d) 2 and 4

**15.** All of the following are seen in Whipple's disease EXCEPT:
(a) Weight loss
(b) Migratory arthropathy
(c) Dementia
(d) Hemolytic anemia

**16.** A middle aged patient with chronic liver disease presents with pain abdomen and distension. He also has diarrhoea and fever since one day. On examination, he is hemodynamically stable with fever of 100 °F. There is jaundice, pallor, pedal edema and ascites. A diagnostic paracentesis is done. Ascitic fluid protein is 0.8 gm%, sugar 100 mg%, total count 500/$mm^3$ of which 85% are polymorphonuclear leaukocytes and 15% lymphocytes. Most likely diagnosis is:
(a) Spontaneous bacterial peritonitis
(b) Secondary bacterial peritonitis
(c) Perforation peritonitis
(d) T B peritonitis

**17.** Herald patch followed by rash is characteristic of:
(a) Psoriasis
(b) Lichen planus
(c) Pityriasis rosea
(d) Dermatophytosis

**18.** A young male comes to the OPD with history of jaundice since many years. He has noted that the jaundice may fluctuate but is often aggravated when he is fasting. There is no history of hospitalisation, no drug use, alcoholism or blood transfusion. Family history is not significant. Clinical examination is unremarkable except for mild scleral icterus. What is the likely diagnosis?
(a) Dubin Johnson syndrome
(b) Crigler Najjar syndrome type-I
(c) Gilbert's syndrome
(d) Rotor syndrome

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**19.** All of the following are causes of anemia in a case of chronic kidney disease EXCEPT:
(a) Decreased red blood cell survival
(b) Hemoglobinopathy
(c) Erythropoietin deficiency
(d) Gastrointestinal blood loss

**20.** Characteristic feature of upper motor neuron lesion includes:
(a) Fasciculations
(b) Hyporeflexia
(c) Clonus
(d) Muscle wasting

esophagus to the trachea. Other variants exist but are much less frequent (e.g., isolated esophageal atresia without fistula, H-type fistula with no atresia, etc.). Infants with TEF often present with excessive salivation, drooling, choking during feeds, or respiratory distress due to aspiration.

**112.** (c) Abacavir

The Nucleoside Reverse Transcriptase Inhibitors (NRTIs) include drugs such as zidovudine, lamivudine, and abacavir. They require intracellular phosphorylation before inhibiting HIV reverse transcriptase. Nevirapine is a Non-Nucleoside RT Inhibitor (NNRTI) that binds directly to reverse transcriptase at a distinct site. Amprenavir and indinavir are protease inhibitors, targeting the HIV protease enzyme rather than the reverse transcriptase.

**113.** (d) There is interference with its effect due to maternal antibodies

BCG (Bacillus Calmette–Guérin) vaccine provides 50–80% protection against severe pediatric TB forms (miliary, meningeal) and works chiefly by stimulating cell-mediated immunity. Although its efficacy against other mycobacterial infections (e.g., leprosy) can be variable, it is not reliably protective against them. Unlike many other vaccines, BCG administered at birth is not significantly hindered by maternal antibodies, which is why it can be given in the neonatal period. Therefore, statement (d) about maternal antibody interference is incorrect.

**114.** (c) Local wound care and 2 doses of rabies vaccine (day 0 and 3)

When a previously vaccinated individual (pre-exposure prophylaxis completed) is re-exposed to rabies within an appropriate interval (e.g., within 1 year), rabies immunoglobulin (RIG) is not indicated. Instead, the recommendation is thorough local wound care and administering two booster doses of vaccine (on days 0 and 3). In contrast, unvaccinated or incompletely vaccinated persons would require both passive immunization (RIG) and a full post-exposure vaccination schedule.

**115.** (a) 6 and 11

HPV types 6 and 11 are typically associated with benign lesions such as anogenital warts (condyloma acuminata) and are considered non-oncogenic. By contrast, HPV types 16 and 18 (and a few others like 31, 33, 45) are classified as high-risk strains, strongly linked to cervical, anal, and oropharyngeal cancers. Hence, among the listed options, only 6 and 11 are the acknowledged non-oncogenic pair.

**116.** (a) Live attenuated organism

Available rotavirus vaccines (e.g., Rotarix, RotaTeq) are typically live attenuated viral vaccines given orally to infants. They replicate in the gut and induce immunity against subsequent rotavirus infections, which otherwise can cause severe gastroenteritis in young children. Killed vaccines, toxoids, and subunit formulations are different vaccine types used for other pathogens (e.g., inactivated polio, tetanus toxoid, hepatitis B surface antigen).

**117.** (b) 4–5 %

In Down's syndrome due to a Robertsonian translocation, the recurrence risk depends on which parent carries the translocation. Maternal carrier status confers a higher risk (often around 10–15 %), whereas paternal carrier status typically carries a lower but still significant risk, often quoted around 2–5 % (commonly approximated as 3 %). Among the answer choices, 4–5 % is closest to the established figure. Therefore, families with a father who is a translocation carrier are counseled about this moderate recurrence risk.

**118.** (c) Ultrasound (KUB), MCU, and DMSA scan

In a high-risk infant (under 1 year, with neurological issues such as CP) who has a first UTI, thorough imaging is recommended to detect structural abnormalities, vesicoureteral reflux, or renal scarring. Commonly, guidelines advise:

1. Ultrasound (KUB) to identify anatomical anomalies.
2. MCU/VCUG (Micturating Cystourethrogram) to detect vesicoureteral reflux.
3. DMSA renal scan to detect renal parenchymal involvement or scarring.

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(c) HbA1c 6.2%, FPG 105 mg/dL
(d) HbA1c 6.6%, FPG 115 mg/dL

33. Cutaneous manifestations of tuberculosis includes:
(a) Erythema nodosum and lupus vulgaris
(b) Erythema marginatum and lupus vulgaris
(c) Phlyctenular conjunctivitis and erythema multiforme
(d) Pyoderma gangrenosum and Dactylitis

34. Treatment of scrub typhus is:
(a) Ciprofloxacin
(b) Clindamycin
(c) Penicillin
(d) Azithromycin

35. Which one of the following is NOT correct regarding Clostridium tetani?
(a) Anaerobic
(b) Non motile
(c) Gram positive
(d) Spore bearing

36. All of the following are extrapulmonary manifestations of mycoplasma infection EXCEPT:
(a) Arthritis
(b) Guillain Barre syndrome
(c) Stevens Johnson syndrome
(d) Dementia

37. A 'slapped cheek rash' is characteristic of infection with:
(a) Rubella
(b) Parvovirus B19
(c) Human herpesvirus 6
(d) Measles

38. A 34 week pregnant nurse comes in contact with a patient with chickenpox at her workplace. She has never had chickenpox in the past and is unvaccinated. The best option for her is:
(a) Varicella zoster immunoglobulin to be given within 7 days
(b) Vaccinate for chicken pox
(c) Start oral acyclovir
(d) Wait and watch

39. Which one of the following has the maximum diagnostic sensitivity for Leishmaniasis?
(a) Splenic aspirate
(b) Bone marrow aspirate
(c) Ascitic fluid aspirate
(d) Lymph node aspirate

40. Which one of the following statements regarding cryptosporidiosis is NOT correct?
(a) Infection is acquired by feco-oral route
(b) It is usually a mild self limiting illness in immunocompetent patient
(c) In HIV infected persons it is a serious opportunistic infection
(d) Treatment is with metronidazole

41. All of the following are live attenuated vaccines EXCEPT:
(a) MMR(Measles, Mumps, Rubella) vaccine
(b) Rabies vaccine
(c) Oral polio vaccine
(d) BCG vaccine

42. All of the following are soil transmitted nematodes EXCEPT:
(a) Ancylostoma duodenale
(b) Strongyloides stercoralis
(c) Necator americanus
(d) Ascaris lumbricoides

43. A veterinary doctor is bitten by a stray dog, which is classified as a category 3 bite. He has completed his pre-exposure prophylactic vaccination with human diploid cell Rabies vaccine with three doses administered on day 0, 7, 28 about 1 year back. Appropriate treatment would include which of the following?
1. Wound care
2. Antibiotics
3. Booster dose of Anti Rabies vaccine
4. Rabies immune globulin at wound site

Select the correct answer using the code given below:
(a) 1 only
(b) 1 and 2 only

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**65.** The toxic effects of aluminium phosphide is due to the release of:
(a) Phosgene
(b) Chlorine
(c) Inorganic phosphates
(d) Phosphine

**66.** An 18 year old boy was brought to the emergency department after being bitten by a saw-scaled viper. The monitoring which is most crucial in this patient is:
(a) Single breath count
(b) Neck flop
(c) Whole blood clotting time
(d) Creatine phosphokinase

**67.** Bite of cobra is likely to result in:
(a) Flaccid paralysis
(b) Coagulopathy
(c) Myolysis
(d) Cardiotoxicity

**68.** Hematuria is a prominent symptom with infection due to:
(a) Strongyloides stercoralis
(b) Schistosoma hematobium
(c) Toxocara spp.
(d) Gnathostomiasis

**69.** Bite of the Tsetse Fly transmits:
(a) Leishmaniasis
(b) Chaga's disease
(c) Dengue fever
(d) African Trypanosomiasis

**70.** A 60 year old man with pneumonia is unconscious and has a $PaO_2$ of 50 mm Hg. The preferred modality of treatment for him is:
(a) Oxygen through nasal cannula
(b) Non invasive ventilation
(c) Invasive mechanical ventilation
(d) No respiratory support is indicated

**71.** Oliguria is defined as a reduction in urine output:
(a) Less than 1 ml/kg/hour
(b) Less than 0.5 ml/kg/hour
(c) Less than 200 ml in 24 hours
(d) Any decrease over previous urine output

**72.** All of the following are signs of Brain death EXCEPT:
(a) Pupils fixed and unresponsive to light
(b) Corneal reflexes absent
(c) Bilateral planter response – Mute or Absent
(d) No gag reflex

**73.** A 35 year old man with history of alcoholism presents with ophthalmoplegia, ataxia and global confusion. The treatment of choice for this patient is:
(a) I.V. Glucose
(b) I.V. Thiamine
(c) I.V. Mannitol
(d) I.V. Immunoglobulin

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**74.** Most common form of paroxysmal supraventricular Tachycardia is:
(a) Junctional Ectopic Tachycardia
(b) AV Nodal Reentry Tachycardia (AVNRT)
(c) Accessory Pathways
(d) Accelerated junctional rhythm

**75.** The primary therapeutic intervention in symptomatic Sino atrial node dysfunction is:
(a) I.V. Atropine
(b) I.V. Isoprenaline
(c) Permanent pacemaker
(d) I.V. Theophylline

**76.** Which of the following are the Indications for lung transplantation?
1. Emphysema
2. Primary pulmonary hypertension
3. Obliterative bronchiolitis

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

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**55.** Gastroenteritis associated with eating raw eggs is usually attributed to:
(a) E.coli
(b) Noro virus
(c) Salmonella species
(d) Clostridium botulinum

**56.** Which one of the following diseases is NOT caused by protozoa?
(a) Trypanosomiasis
(b) Leishmaniasis
(c) Amoebiasis
(d) Schistosomiasis

**57.** An adult with fever and right sided chest pain is found to have a moderate right sided pleural effusion. Chest X-Ray (PA view) shows a moderate pleural effusion. A diagnostic thoracocentesis reveals straw coloured exudates with 50 mg% of sugar and lymphocytic pleocytosis. ADA levels are borderline. What investigation would be most likely to confirm a diagnosis of tuberculosis?
(a) Needle Biopsy of the Pleura
(b) Pleural Fluid Xpert MTB/RIF assay
(c) Pleural Fluid AFB smear
(d) Pleural Fluid AFB-culture

**58.** Consider the following statements with regard to acute anterior poliomyelitis:
1. It is caused by a virus belonging to picornavirus family
2. Muscle pain and cramps may be associated with diffuse transient fasciculations at the onset
3. Tonsillectomy reduces the risk of bulbar poliomyelitis
4. Cerebrospinal fluid may show mild pleocytosis with increase polymorphonuclear cells in early course of disease

Which of the above statements are correct?
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 2 and 4
(d) 1, 3 and 4

**59.** Which one of the following is NOT seen in case of Marasmus?
(a) Reduced triceps skinfold thickness
(b) Normal serum albumin
(c) Easy hair pluckability
(d) Decreased mid arm circumference

**60.** Perception of an object in absence of stimulus is:
(a) Illusions
(b) Delusions
(c) Hallucination
(d) Psychosis

**61.** All of the following drugs can be used for the treatment for cessation of smoking EXCEPT:
(a) Nicotine gum
(b) Clonazepam
(c) Bupropion
(d) Varenicline

**62.** All of the following features are present in Organophosphorus poisoning EXCEPT:
(a) Bronchorrhea
(b) Hypertonia
(c) Confusion
(d) Fasciculations

**63.** Small sized pupils are seen in poisoning with all EXCEPT:
(a) Organophosphorous compounds
(b) Opioids
(c) Clonidine
(d) Cocaine

**64.** A 24 year old male presents with consumption of an unknown substance. His respiratory rate is 22/min, pulse rate is 110/min, BP is 150/94 mmHg and he has 2 episodes of seizures. There are tremors and hallucinations. The substance ingested most likely is:
(a) Amphetamines
(b) Diazepam
(c) Oxycodone
(d) Ethanol

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# PAPER 2018 ANSWERS

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1. (b) Tricuspid valve

Carcinoid syndrome often leads to fibrous deposits of serotonin and related substances predominantly on the right side of the heart, especially affecting the tricuspid valve. This is because the metabolites released by carcinoid tumors are largely inactivated by the lungs and therefore typically do not affect the left side of the heart unless a right-to-left shunt is present. Tricuspid regurgitation and, less commonly, pulmonary valve disease are the hallmarks of carcinoid heart disease.

2. (a) Aspirin, Sublingual nitroglycerin, Clopidogrel, Primary PCI

For an acute myocardial infarction occurring just one week after prior streptokinase treatment, re-thrombolysis with the same agent is generally avoided due to high risk of allergic reactions and reduced efficacy. Current guidelines emphasize urgent reperfusion with primary PCI if available promptly, as it provides the most definitive and effective reperfusion strategy in this scenario. Therefore, immediate antiplatelet therapy (aspirin, clopidogrel), sublingual nitroglycerin, and emergent primary PCI is considered the best approach.

3. (b) Ventricular Tachycardia

A fusion beat occurs when a supraventricular impulse and a ventricular ectopic impulse activate the ventricles simultaneously, producing a hybrid QRS complex. This is most often seen in Ventricular Tachycardia, where occasional normal supraventricular depolarizations "capture" or partially merge with the ongoing abnormal ventricular rhythm. Detecting fusion (and capture) beats helps distinguish Ventricular Tachycardia from Supraventricular Tachycardia with aberrancy.

4. (a) Primary percutaneous coronary intervention

Primary PCI is the gold standard for ST-elevation myocardial infarction provided it can be performed in a timely manner by an experienced team. Although the patient has had symptoms for 24 hours, PCI may still confer benefits, especially if ongoing ischemia persists. Thrombolysis typically has limited benefit after 12 hours and higher risk of complications. Therefore, primary PCI remains the preferred choice to restore coronary blood flow, limit myocardial damage, and improve long-term outcomes.

5. (c) Prazosin

In men with hypertension and benign prostatic hypertrophy, an alpha-1 receptor blocker such as Prazosin is advantageous. It lowers blood pressure by reducing peripheral vascular resistance and also helps relieve urinary obstruction by relaxing the smooth muscle in the bladder neck and prostate. This dual benefit contrasts with many other antihypertensives which do not improve urinary symptoms. Hence, an alpha-1 blocker is often preferred when coexisting BPH needs symptomatic relief along with blood pressure control.

6. (b) Mitral valve replacement

For severe rheumatic mitral stenosis, percutaneous balloon valvuloplasty is generally preferred if the valve is pliable with minimal calcification or subvalvular involvement. However, if echocardiography shows heavy calcification and marked thickening, the valve typically will not respond well to balloon dilation. In such a case, surgical intervention (particularly mitral valve replacement) becomes the best option for definitive treatment, as medical management alone is insufficient and balloon valvuloplasty has low success if the valve is extensively calcified.

7. (d) Shock

Respiratory failure is often classified into four types. Type IV respiratory failure occurs in patients who are in shock, leading to inadequate tissue perfusion and potential respiratory failure

**77.** Which one of the following is used to distinguish narrowing of large airway from small airway?
(a) Peak expiratory flow rate is measured
(b) Flow/volume loops are recorded
(c) Forced expiratory volume in one second is measured
(d) Flow/time loops are recorded

**78.** The most common cause of chronic relapsing diarrhoea is:
(a) Inflammatory bowel disease
(b) Coeliac disease
(c) Microscopic colitis
(d) Irritable bowel syndrome

**79.** The most common cause of severe acute lower gastrointestinal bleeding is:
(a) Angiodysplasia of colon
(b) Diverticular disease
(c) Ischaemia of bowel
(d) Inflammatory bowel disease

**80.** Risk scoring system used to stratify the patients of acute upper gastrointestinal bleeding to predict the need for intervention to treat bleeding is:
(a) Modified Blatchford score
(b) Modified Child Pugh score
(c) Balthazar score
(d) Meld score

**81.** Corkscrew hairs are seen due to deficiency of:
(a) Vitamin A
(b) Vitamin E
(c) Vitamin K
(d) Vitamin C

**82.** Which of the following are the indications of Renal biopsy?
1. Chronic Kidney disease with normal sized kidney
2. Nephrotic syndrome in adults
3. Nephrotic syndrome in children with atypical features

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**83.** Which of the following are common risk factors for contrast Induced Nephrotoxicity?
1. Use of high osmolality, ionic contrast media
2. Diabetes Mellitus
3. Myeloma

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**84.** Presence of Dysmorphic Erythrocytes in urine analysis is suggestive of:
(a) Pyelonephritis
(b) Nephritis
(c) Renal stone disease
(d) Renal tract infection

**85.** Syndrome of Inappropriate ADH secretion (SIADH) is usually associated with:
(a) Small cell lung cancer
(b) Squamous cell lung cancer
(c) Large cell lung cancer
(d) Adenocarcinoma lung cancer

**86.** A silent, resonant Hemithorax on examination is suggestive of:
(a) Large Pleural effusion
(b) Pneumothorax
(c) Bronchial asthma
(d) Consolidation

**87.** Gower's sign is positive in:
(a) Peroneal muscle atrophy
(b) Duchenne's dystrophy
(c) Friedreich ataxia
(d) Cerebellar disease

**88.** All of the following are the indications of renal replacement therapy EXCEPT:
(a) Metabolic Acidosis (pH < 7.25)

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(b) Hypercalcemia
(c) Hyperkalemia ($K^+$ 6 mmol/L)
(d) Fluid overload

**89.** All of the bacterial diseases are exotoxin-mediated EXCEPT:
(a) Botulism
(b) Diphtheria
(c) Typhoid
(d) Tetanus

**90.** The following substances can cause dilated pupils EXCEPT:
(a) Tricyclic Antidepressants
(b) Cocaine
(c) Clonidine
(d) Amphetamines

**91.** Which one of the following drugs can cause Pulmonary Eosinophilia?
(a) Nitrofurantoin
(b) Valproate
(c) Enalapril
(d) Amoxycillin

**92.** CA 19-9 is a tumour marker used for the diagnosis of:
(a) Lung cancer
(b) Prostate cancer
(c) Ovarian cancer
(d) Pancreatic cancer

**93.** Tinea versicolor is caused by:
(a) Candida albicans
(b) Trichophyton
(c) Streptococci
(d) Malassezia furfur

**94.** Osborn wave in ECG is characteristic of:
(a) Hypothyroidism
(b) Hypovolemia
(c) Hypothermia
(d) Hypocalcemia

**95.** Disease modifying agent of choice for the peripheral manifestations of ankylosing spondylitis is:
(a) Methotrexate
(b) Hydroxychloroquine
(c) Sulfasalazine
(d) Leflunomide

**96.** Drug of choice for treating hypertensive emergency in a case of Aortic dissection is:
(a) Phentolamine
(b) Prazosin
(c) Nitroprusside
(d) Amlodipine

**97.** A 5 year old boy is brought to the Emergency Room following a crushing injury. The ECG reveals peaked T waves, prolonged PR interval and widened QRS complexes. Which of the following treatments should be administered immediately?
(a) Sodium bicarbonate infusion
(b) Intravenous bolus procainamide
(c) Insulin infusion
(d) Intravenous magnesium sulphate

**98.** A child with Acute Lymphoblastic Leukemia is started on chemotherapy. After 2 days he develops vomiting, decreased urine output abdominal pain and tetanic spasms. The ECG reveals QTc prolongation. Which one of the following therapies will be detrimental to his management?
(a) Normal maintenance intravenous fluid
(b) Oral phosphate binders
(c) Intravenous rasburicase
(d) None of these

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**99.** Which of the following treatment modalities is NOT recommended for worsening respiratory distress in a child suspected to be suffering from acute croup?
(a) Sedation
(b) Intravenous antibiotics
(c) Nebulised racemic epinephrine
(d) Intramuscular dexamethasone

**100.** Which of the following developmental skills will you expect a child to have acquired by 9 months?
(a) Cruising around the furniture
(b) Mature pincer grasp
(c) Waves 'bye-bye'
(d) Refers to mother as 'ma-ma'

**101.** Which of the following is physiological in a term neonate?
(a) Hypotonia
(b) Erythema toxicum
(c) Jaundice at 20 hours of life
(d) Direct serum bilirubin level = 3.0 mg/dL

**102.** A preterm neonate undergoes the initial steps of resuscitation. The clinician observes that the baby is breathing, has a heart rate of 80/minute and the baby is pink. What will be the next immediate step in management?
(a) Administering intravenous epinephrine
(b) Chest compressions
(c) Positive pressure ventilation
(d) Supplemental oxygen

**103.** A child is able to copy a triangle, names 4 colours, dresses and undresses easily and is able to skip. What is the likely age of this child?
(a) 30 months
(b) 36 months
(c) 48 months
(d) 60 months

**104.** Which of the following will be considered to be a 'RED FLAG' in child development?
(a) No vocalization by 4 months
(b) Unable to sit without support by 10 months
(c) Unable to walk independently by 15 months
(d) Unable to speak a single word with meaning by 15 months

**105.** Gastric lavage is contraindicated in which of the following?
1. Corrosive poisoning
2. Organophosphorus poisoning
3. Iron intoxication
4. Turpentine oil ingestion

Select the correct answer using the codes given below:
(a) 1 and 2
(b) 2 and 3
(c) 3 and 4
(d) 4 and 1

**106.** A 10-year old girl is brought to the emergency following a road traffic accident. The child is comatose with GCS score of 4. She is hypertensive, has bradycardia and extensor posturing. CT imaging reveals comminuted skull fractures and intraparenchymal hemorrhage. The initial management should include all of the following measures EXCEPT:
(a) Head of bed elevation
(b) Mechanical ventilation
(c) Intravenous dexamethasone
(d) Hypertonic saline administration

**107.** A 3-year old boy is brought with complaints of staying aloof. He also has delayed speech. Rest of the developmental milestones were attained normally. The most likely diagnosis is:
(a) Selective mutism
(b) Attention deficit hyperactivity disorder
(c) Autism
(d) Phonological disorder

**108.** Which of the following statements regarding HPV (Human Papilloma Virus) vaccine is NOT true?
(a) It can be safely administered in pregnancy
(b) The recommended age for initiation of vaccination is 10–12 years
(c) Catch up vaccination may be permitted up to 26 years of age, provided the woman is not sexually active
(d) The vaccine is administered intramuscularly in deltoid region

**109.** A 6-year old boy comes to the immunization clinic having received all vaccines as per schedule till 18 months of age. Which vaccine should be administered now?
(a) DTPw booster
(b) TdaP booster
(c) DT booster

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(c) 1, 2 and 3
(d) 2, 3 and 4

**44.** Loffler's syndrome is caused due to infection by:
(a) Strongyloidiasis
(b) Filariasis
(c) Cysticercosis
(d) Ascaris

**45.** Which of the following is/are the common infectious syndrome(s) associated with Klebsiella pneumoniae?
1. Pneumonia
2. Intra-abdominal infections
3. Hepatitis

Select the correct answer using the code given below:
(a) 1 only
(b) 1 and 2 only
(c) 1, 2 and 3
(d) 2 only

**46.** Differential diagnosis of dysenteric syndrome includes which of the following?
1. Salmonella infection
2. Campylobacter infection
3. Shigella infection
4. Clostridium infection

Select the correct answer using the code given below:
(a) 1, 2 and 4 only
(b) 2, 3 and 4 only
(c) 1 and 3 only
(d) 1, 2, 3 and 4

**47.** Antifungal agent of choice for the treatment of mucormycosis is:
(a) Voriconazole
(b) Itraconazole
(c) Amphotericin-B
(d) Fluconazole

**48.** What drug therapy would be appropriate for management of UTI in a pregnant patient?
(a) Trimethoprim-sulfamethoxazole
(b) Ciprofloxacin
(c) Ampicillin
(d) All of these

**49.** Which one of the following conditions is NOT associated with lymphocytosis?
(a) Infectious mononucleosis
(b) Viral fevers
(c) Rickettsial fevers
(d) Leptospirosis

**50.** Which of the following is NOT a diagnostic criterion of Kwashiorkor?
(a) Serum albumin < 2.8 g/dl
(b) Triceps skinfold thickness < 3 mm
(c) Easy hair pluckability
(d) Edema

**51.** Which one of the following drugs does NOT have any action against Salmonella typhi?
(a) Erythromycin
(b) Amoxicillin
(c) Co-trimoxazole
(d) Doxycycline

**52.** All of the following drugs are used for the treatment of influenza EXCEPT:
(a) Zanamivir
(b) Rimantadine
(c) Oseltamivir
(d) Tenofovir

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**53.** Diagnostic accuracy has been enhanced by the ability to detect specific DNA sequences in all of the following infectious micro-organisms EXCEPT:
(a) Cytomegalovirus (CMV)
(b) Human Immunodeficiency virus (HIV)
(c) Mycobacterium tuberculosis
(d) Staphylococcus aureus

**54.** Hip Flexor Spasm is characteristic of:
(a) Osteomyelitis femur
(b) Septic arthritis hip joint
(c) Psoas abscess
(d) Deep vein thrombosis

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(d) TT booster

**110.** 'Time-out' strategy is used for management of children having:
(a) Tics
(b) Temper tantrums
(c) Stuttering
(d) Breath holding spells

**111.** All of the following are included in the 'Mission Indradhanush' EXCEPT:
(a) Japanese Encephalitis vaccine
(b) Measles vaccine
(c) Hepatitis A vaccine
(d) Haemophilus influenza type B vaccine

**112.** Which of the following is the best mode of management of a newborn born to a mother with Hepatitis B infection?
(a) Hepatitis B Immunoglobulin (HBIG) and Hepatitis B vaccine at birth
(b) 1 and monotherapy with Infection
(c) 1 and monotherapy with Lamivudine
(d) 1 and monotherapy with Adefovir

**113.** At what age should a lateral neck radiograph be done for a child with Downs syndrome to rule out atlanto-occipital subluxation?
(a) At birth
(b) At 1 year
(c) At 2 years
(d) At 3 years

**114.** Which X ray will be used to evaluate the bone age (skeletal age) of a term newborn at birth?
(a) Wrist
(b) Shoulder
(c) Knee
(d) Elbow

**115.** Which of the following permanent tooth eruption event has close correlation with menarche?
(a) First premolar
(b) First molar
(c) Second premolar
(d) Second molar

**116.** Which one of the following is NOT a component of the '4 Ds' that are the focus of the Rashtriya Bal Suraksha Karyakram (RBSK)?
(a) Deficit
(b) Disease
(c) Deficiency
(d) Developmental delay

**117.** In which one of the following age groups is the highest rate of drowning observed, worldwide?
(a) Less than 1 year
(b) 1–4 years
(c) 4–10 years
(d) 10–15 years

**118.** Which of the following is the recommended initial intravenous therapy in a 2-year old child with Severe Acute Malnutrition with Severe Dehydration and Shock?
(a) Ringer Lactate (R) at the rate of 30 mL/kg over first 30 minutes
(b) Half-normal saline (N/2) in 5% dextrose at the rate of 15 mL/kg over first 60 minutes
(c) Normal saline (NS) at the rate of 20 mL/kg over the first 30 minutes
(d) N/5 saline with 5% dextrose at the rate of 30 mL/kg over first 60 minutes

**119.** A female carrier for hemophilia A gene gets married to a genetically normal male. What are the chances of her delivering a male offspring with hemophilia?
(a) 0%
(b) 25%
(c) 50%
(d) 100%

**120.** What is the definition of 'Cold stress' in a newborn as measured by the axillary temperature?
(a) 35.0 – 35.5 °C
(b) 35.0 – 36.0 °C
(c) 35.5 – 36.5 °C
(d) 36.0 – 36.4 °C

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due to low oxygen delivery and high metabolic demands. Types I and II involve issues of oxygenation and/or $CO_2$ retention (like in asthma, COPD), while Type III (perioperative) is attributed to lung collapse around the time of anesthesia. Shock states (hypovolemia, cardiogenic, or septic) are prototype Type IV.

**8.** (a) Glomerulonephritis

Polyarteritis Nodosa (PAN) is a necrotizing vasculitis of medium-sized muscular arteries and typically involves various organs, leading to manifestations such as peripheral neuropathy (mononeuritis multiplex), bowel ischemia/infarction, and cardiac complications like pericarditis. Although renal arteries can be involved, PAN characteristically spares the pulmonary circulation and does not usually cause a primary glomerulonephritis. Renal involvement takes the form of infarctions or microaneurysms rather than immune-complex-mediated glomerular inflammation. Hence "glomerulonephritis" is the feature generally not seen in PAN.

**9.** (c) Family history of psychiatric illness

An organic cause of psychiatric symptoms is often suspected when there is an unusually late onset of presentation, absence of prior psychiatric history, and lack of a clear psychosocial trigger. Such scenarios raise the possibility of a medical or neurological condition underlying the changes in mood or cognition. A known family history of similar psychiatric illness generally suggests a primary (functional) psychiatric disorder, making option (c) the one that least supports an organic etiology.

**10.** (a) Levo salbutamol

Long Acting Beta-2 Agonists (LABAs) include agents like Salmeterol, Formoterol, and Indacaterol, each providing prolonged bronchodilation, typically lasting 12 hours or more. Levo salbutamol (levosalbutamol) is the R-isomer of salbutamol (albuterol) and is categorized as a short-acting beta-2 agonist (SABA) with a duration of action around 4–6 hours. Therefore, levo salbutamol is not classified as LABA.

**11.** (b) Defect in T cell function

Mycobacterium tuberculosis is primarily contained by cell-mediated immunity (CMI). T lymphocytes coordinate macrophages and cytotoxic responses crucial for controlling intracellular pathogens like TB bacilli. When there is a defect in T cell function—whether from immunosuppressive states (HIV) or genetic T-cell deficiencies—individuals become susceptible to progressive or disseminated tuberculosis. B cells and antibodies play a lesser role in clearing intracellular pathogens like Mycobacterium tuberculosis, which is why T-cell defects are the key risk factor.

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**12.** (a) Streptococcus pneumoniae

Streptococcus pneumoniae (pneumococcus) remains the most frequent etiological agent of community-acquired pneumonia in adults. Although Mycoplasma pneumoniae, Staphylococcus aureus, and Legionella species can cause pneumonia in specific clinical contexts or outbreaks, pneumococcus is the leading cause overall. It often presents with an acute onset of fever, productive cough (classically rust-colored sputum), and lobar consolidation on chest imaging, especially in typical pneumonia.

**13.** (c) Sarcoidosis

Sarcoidosis is characterized by non-caseating granulomas in multiple organs, commonly presenting with bilateral hilar lymphadenopathy, pulmonary involvement, and various systemic findings. Fever, arthralgia, and erythema nodosum (Löfgren's syndrome) are quite suggestive of acute sarcoidosis. A negative mantoux test, despite significant hilar lymphadenopathy, further points away from tuberculosis. Sarcoidosis can also involve the skin, eyes, and liver, among other organs.

**14.** (a) 1 and 3

Light's criteria classify a pleural effusion as exudative if one or more are met:

1. Pleural fluid protein/serum protein ratio 0.5
2. Pleural fluid LDH/serum LDH ratio 0.6
3. Pleural fluid LDH two-thirds the upper limit of normal serum LDH.

Hence statements 1 and 3 (protein 0.5, LDH ratio 0.6) characterize an exudative effusion.

**15.** (d) Hemolytic anemia

Whipple's disease, caused by Tropheryma whipplei, commonly presents with chronic malabsorptive symptoms such as diarrhea, weight loss, and steatorrhea. Patients can develop migratory arthralgias or polyarthritis, and about one-third may exhibit neurological manifestations, including cognitive changes or dementia. Hemolytic anemia is not a classic feature of this disease; instead, anemia—if present—usually arises from malabsorption and nutrient deficiencies. Thus, hemolysis is the exception.

**16.** (a) Spontaneous bacterial peritonitis

Spontaneous bacterial peritonitis (SBP) is common in cirrhotic patients with ascites, especially when PMN count is $\geq$250 cells/mm$^3$. Here, the total count is 500 cells/mm$^3$ with 85% PMNs. The low ascitic protein (0.8 g%) is typical in cirrhotic fluid, and the relatively normal glucose (100 mg%) helps distinguish SBP from secondary peritonitis (where glucose might be very low). TB peritonitis usually shows high protein content and predominantly lymphocytic ascites.

**17.** (c) Pityriasis rosea

Pityriasis rosea typically begins with a solitary "herald patch" — often a larger, oval, scaly lesion. After several days to weeks, multiple smaller lesions with a characteristic "Christmas-tree" pattern appear, usually along skin cleavage lines. Psoriasis, lichen planus, and dermatophytosis have different clinical patterns and do not begin with a distinct herald patch followed by widespread similar lesions in the same manner as pityriasis rosea.

**18.** (c) Gilbert's syndrome

Gilbert's syndrome is a mild unconjugated hyperbilirubinemia due to reduced activity of the bilirubin-conjugating enzyme UDP-glucuronyl transferase. It often manifests as mild jaundice, which can become more noticeable during fasting, stress, or illness. There is typically no significant liver dysfunction or hemolysis. Normal examination and benign history further support Gilbert's. Dubin-Johnson and Rotor syndromes involve predominantly conjugated hyperbilirubinemia, and Crigler-Najjar type I is more severe.

**19.** (b) Hemoglobinopathy

Chronic kidney disease commonly causes anemia through several mechanisms: lower erythropoietin production (leading to inadequate RBC generation), shortened RBC lifespan, and sometimes increased GI losses due to platelet dysfunction. Hemoglobinopathies (such as thalassemias or sickle cell disease) are inherited disorders unrelated to CKD pathophysiology. Hence, "hemoglobinopathy" does not typically arise as a direct consequence of CKD and is thus the incorrect association in this list.

**20.** (c) Clonus

Upper Motor Neuron (UMN) lesions typically produce hyperreflexia, increased tone (spasticity), pathological reflexes (e.g., Babinski sign), and clonus (a rhythmic series of contractions often triggered by sudden stretching). Fasciculations and significant muscle wasting occur with Lower Motor Neuron (LMN) pathology. Hyporeflexia is also a feature of LMN lesions. Thus, clonus is a classic sign of disordered descending motor control originating from UMN damage.

**21.** (d) Posterior inferior cerebellar artery

Lateral medullary (Wallenberg) syndrome typically results from occlusion of the Posterior Inferior Cerebellar Artery (PICA). The infarct affects structures in the lateral medulla such as the vestibular nuclei, spinal trigeminal nucleus, nucleus ambiguus, sympathetic fibers, and spinothalamic tract. Clinical features include vertigo, nystagmus, dysphagia, hoarseness, ipsilateral loss of facial pain and temperature sensation, and contralateral loss of pain/temperature in the body.

**22.** (b) Inappropriate affect

Damage to the dominant (usually left) angular and supramarginal gyrus can produce

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Gerstmann's syndrome, characterized by finger agnosia, inability to write (agraphia), left-right disorientation, and dyscalculia. Inappropriate affect is not part of this syndrome; rather, these parietal lesions cause specific cognitive/perceptual deficits rather than overt emotional disturbances. Hence, "inappropriate affect" is the feature that one would not expect in such a lesion.

**23.** (d) Iron deficiency anaemia

In iron deficiency anemia, the body upregulates transferrin production to capture more iron, causing a rise in total iron binding capacity (TIBC). A TIBC above approximately 360 µg/dl is typically associated with iron deficiency. By contrast, anemia of chronic disease or sideroblastic anemia usually shows normal or decreased TIBC. Hemoglobinopathies do not characteristically raise TIBC to high levels unless there is coincident iron deficiency.

**24.** (d) Panic disorder

Panic disorder is characterized by sudden episodes (paroxysms) of intense fear or discomfort accompanied by physical symptoms such as palpitations, sweating, and a sense of impending doom. Patients often exhibit an urge to escape or flee the situation. This "escape behavior," alongside the sudden and recurrent nature of attacks, is a hallmark of panic disorder, distinct from the more persistent and situational anxieties seen in phobias or generalized anxiety disorder.

**25.** (d) 2 and 4

Prothrombin time (PT) reflects the extrinsic and common coagulation pathways, particularly factor VII. Factor VII deficiency therefore prolongs the PT. Warfarin, which blocks vitamin K-dependent factors (including factor VII), also prolongs PT. Factor VIII deficiency affects the intrinsic pathway and primarily prolongs aPTT, not PT. Heparin, under typical therapeutic dosing, is monitored by aPTT; it only significantly prolongs PT if given in very high doses. Hence factors VII deficiency and warfarin therapy are the clear causes of prolonged PT.

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**26.** (a) Hyperlipidemia, Obesity, Type-2 DM

"Syndrome X," also known as Metabolic Syndrome, typically involves central obesity, dyslipidemia (high triglycerides and/or low HDL), insulin resistance/type 2 diabetes mellitus, and hypertension. The combination of hyperlipidemia, obesity, and insulin resistance/diabetes captures the essence of Metabolic Syndrome. Coronary artery disease (CAD) risk is elevated but not an immediate diagnostic criterion. Hyponatremia does not figure into this syndrome's usual definition.

**27.** (b) Glucose

Growth Hormone (GH) release is stimulated by factors like arginine, clonidine, L-Dopa (via dopaminergic pathways), and GH-releasing hormone. Conversely, GH secretion is suppressed by hyperglycemia. A glucose load (oral or IV) lowers GH levels, which is the principle behind the oral glucose tolerance test for acromegaly diagnosis. Thus, among the listed options, glucose is the recognized inhibitor of GH release.

**28.** (c) Lithium

Long-term lithium therapy can cause hypercalcemia by increasing parathyroid hormone (PTH) secretion and/or altering the parathyroid gland's set point. Other listed drugs commonly have different metabolic or electrolyte effects: phenytoin can influence vitamin D metabolism but generally not in a way that causes persistent hypercalcemia; heparin is not associated with hypercalcemia; and furosemide can cause increased calcium excretion, thereby lowering serum calcium levels.

**29.** (c) Glulisine

Insulin glargine, detemir, and degludec are all long-acting (or ultra-long-acting) insulins designed to provide a basal insulin level over many hours. By contrast, insulin glulisine is a rapid-acting insulin analogue, with onset in around 15 minutes and duration of action typically 3–5 hours. Hence, glulisine is the "exception" among the listed options.

**30.** (a) Autoimmune disease

Vitiligo is characterized by depigmented patches of skin resulting from loss of melanocytes. It often coexists with autoimmune conditions (e.g. autoimmune thyroiditis, pernicious anemia, Addison's disease) because of shared genetic and immunological factors. While vitiligo can be idiopathic, its presence frequently raises suspicion for underlying autoimmunity, and evaluation for other autoimmune disorders is often warranted.

**31.** (b) Subclinical hypothyroidism

Subclinical hypothyroidism is defined by an elevated TSH with normal circulating levels of T4 (and T3). Patients are often asymptomatic or have very mild symptoms, if any. In contrast, primary hypothyroidism typically features both high TSH and low T4. Thyroid hormone resistance is a rare genetic condition involving end-organ resistance. Lab artifacts do not explain persistently mild TSH elevations in the typical clinical setting.

**32.** (c) HbA1c 6.2%, FPG 105 mg/dL

Prediabetes criteria generally include:

1. Fasting Plasma Glucose (FPG) 100–125 mg/dL
2. HbA1c 5.7–6.4%

In option (c), the FPG of 105 mg/dL and HbA1c of 6.2% both lie within the prediabetic range. A fasting glucose of 126 mg/dL or higher typically signifies diabetes, as does an HbA1c $\geq$6.5%.

**33.** (a) Erythema nodosum and lupus vulgaris

Tuberculosis can manifest on the skin with lupus vulgaris (a chronic, plaque-like lesion) and may also be associated with erythema nodosum (a hypersensitivity reaction causing tender nodules on the legs). Erythema marginatum is linked to rheumatic fever; pyoderma gangrenosum is often associated with inflammatory bowel disease; and phlyctenular conjunctivitis is typically a hypersensitivity reaction often related to TB, but erythema multiforme is more commonly related to infections like herpes or mycoplasma and certain drugs.

**34.** (d) Azithromycin

Scrub typhus is caused by Orientia tsutsugamushi, transmitted by chiggers. The classic therapies include doxycycline (a first-line agent) or azithromycin. Among the listed options, azithromycin is the most appropriate and is especially useful in pregnant women or those intolerant to doxycycline. Ciprofloxacin, clindamycin, or penicillins are generally not reliable treatments for scrub typhus.

**35.** (b) Non motile

Clostridium tetani is a gram-positive, spore-forming, obligate anaerobe. It is classically described as a motile rod with peritrichous flagella in its vegetative form. "Non motile" is therefore incorrect. These bacteria produce tetanospasmin, the neurotoxin responsible for the clinical manifestations of tetanus (rigidity and spasms).

**36.** (d) Dementia

Mycoplasma pneumoniae, besides causing respiratory infections, can lead to a variety of extrapulmonary complications such as rashes (including Stevens-Johnson syndrome), neurological syndromes (Guillain-Barré), and arthritis. Dementia, however, is not typically a recognized acute or subacute sequela of mycoplasma infection. Acute confusional states can occur but are not the same as a true dementia process.

**37.** (b) Parvovirus B19

Parvovirus B19 causes erythema infectiosum (Fifth Disease) in children, featuring a bright red erythema on the cheeks ("slapped cheek" appearance) and a lacy rash on the body. Rubella typically presents with a fine, pink rash that starts on the face and spreads downward; measles causes a darker rash with Koplik spots; HHV-6 causes roseola infantum with high fever followed by a pink rash.

**38.** (a) Varicella zoster immunoglobulin to be given within 7 days

A pregnant, non-immune contact of a confirmed chickenpox case is at high risk of varicella infection and associated complications. Varicella Zoster Immunoglobulin (VZIG), administered

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as soon as possible (ideally within 96 hours, up to 10 days), can prevent or attenuate the infection. Live vaccination is contraindicated during pregnancy, and while acyclovir can treat varicella, prophylactic immunoglobulin offers the best prevention in this scenario.

**39.** (a) Splenic aspirate

Visceral leishmaniasis ("kala-azar") is diagnosed by identifying the parasite (Leishmania donovani) in tissue aspirates or biopsies. The sensitivity of splenic aspirate is highest (often exceeding 90%) for detecting Leishmania amastigotes. However, it requires expertise due to the risk of hemorrhage. Bone marrow aspirations are safer but slightly less sensitive. Ascitic fluid and lymph node aspirates are less commonly used or have lower yield.

**40.** (d) Treatment is with metronidazole

Cryptosporidiosis is transmitted by the fecal-oral route and typically causes a self-limiting diarrheal illness in immunocompetent individuals. In HIV/AIDS or immunocompromised patients, it can lead to severe, life-threatening diarrhea. Metronidazole is ineffective against Cryptosporidium. The recommended treatment in immunocompetent individuals is often nitazoxanide; in severely immunocompromised patients, restoring immune function (e.g. with antiretroviral therapy) is crucial for controlling the infection.

**41.** (b) Rabies vaccine

Live attenuated vaccines contain weakened forms of the pathogen that can still replicate to a limited degree, inducing robust immunity. MMR, oral polio (OPV), and BCG (for tuberculosis) are classic examples. In contrast, the widely used modern rabies vaccines are inactivated (killed) preparations. They do not contain live virus and therefore are classified as inactivated or killed vaccines, not live attenuated.

**42.** (b) Strongyloides stercoralis

The World Health Organization commonly lists Ascaris lumbricoides, Trichuris trichiura, and hookworms (Ancylostoma duodenale, Necator americanus) as the principal "soil-transmitted helminths." Though Strongyloides stercoralis larvae can indeed penetrate skin from contaminated soil, it is classically treated as a separate entity and is not grouped with the major "soil-transmitted nematodes" of global health importance. By WHO definition, "strongyloidiasis" is usually listed under separate surveillance and control strategies.

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**43.** (c) 1, 2 and 3

For a previously immunized person (pre-exposure prophylaxis completed) who sustains a high-risk (category 3) rabies bite, the recommended post-exposure management is thorough wound washing (wound care) and giving two booster doses of vaccine (on days 0 and 3). Rabies immune globulin (RIG) is not indicated in those already vaccinated. Antibiotics may be given if the wound is deep or at high risk of bacterial infection, although policies vary. Hence, items 1 (wound care), 2 (antibiotics), and 3 (booster doses) are appropriate.

**44.** (d) Ascaris

Loffler's syndrome is a transient respiratory illness with pulmonary infiltrates and peripheral eosinophilia. The most classic parasitic cause is Ascaris lumbricoides (particularly during the larval migration through the lungs). Although other helminths (Strongyloides, hookworms) can also produce similar phenomena, Ascaris is the textbook example of Loffler's syndrome. Patients may present with cough, fleeting pulmonary opacities on chest imaging, and marked eosinophilia, but these findings often resolve spontaneously.

**45.** (b) 1 and 2 only

Klebsiella pneumoniae is classically associated with lobar pneumonia (often with "currant jelly" sputum) and a range of intra-abdominal infections, including liver abscesses especially in certain geographic regions. True "hepatitis," in the sense of a primary inflammatory process of the liver parenchyma (like viral hepatitis), is not a usual presentation of Klebsiella infection. Therefore, pneumonia and intra-abdominal infections are correct associations, whereas hepatitis is not routinely linked to this organism.

**46.** (d) 1, 2, 3 and 4

"Dysenteric syndrome" refers to inflammatory diarrhea characterized by blood and/or mucus in stool and tenesmus. Common bacterial causes include Shigella, certain Salmonella strains (non-typhoidal), Campylobacter jejuni, and Clostridium difficile (which can produce a severe colitis that may present with bloody diarrhea). While Shigella is most classically associated with dysentery, all listed organisms can present with a dysentery-like picture in various settings.

**47.** (c) Amphotericin-B

Mucormycosis (caused by Mucorales fungi) typically requires liposomal Amphotericin B as the first-line pharmacological treatment. Surgical debridement of necrotic tissue is also critical. Azoles such as voriconazole, itraconazole, or fluconazole are not reliably active against Mucor species. Posaconazole or isavuconazole can be used as salvage or step-down therapy, but Amphotericin-B is generally the agent of choice for initial, aggressive management.

**48.** (c) Ampicillin

In pregnancy, fluoroquinolones (e.g., ciprofloxacin) are contraindicated because of potential adverse effects on fetal cartilage. Trimethoprim-sulfamethoxazole is avoided especially in the first trimester (risk of neural tube defects) and near term (risk of kernicterus). Ampicillin (or amoxicillin), certain cephalosporins, nitrofurantoin (avoided at term), and fosfomycin are safer options. Therefore, among the listed choices, ampicillin is the appropriate empiric therapy for UTI in pregnancy.

**49.** (c) Rickettsial fevers

Typical causes of lymphocytosis include infectious mononucleosis (marked atypical lymphocytes), many viral infections, and certain other chronic infections. Rickettsial fevers (e.g., spotted fevers, typhus) more commonly present with normal or slightly low/high total WBC counts but generally not a pronounced lymphocytosis. Leptospirosis is primarily neutrophil-predominant in early stages, but various viral fevers and especially mononucleosis classically cause elevated lymphocyte counts. Of the options given, rickettsial fevers are least likely to show a notable lymphocytosis.

**50.** (b) Triceps skinfold thickness < 3 mm

Kwashiorkor (protein malnutrition) is classically associated with edema, hypoalbuminemia (albumin often <2.8 g/dl), skin/hair changes, and "easy pluckability" of hair. Triceps skinfold thickness <3 mm is more representative of severe caloric (energy) deficiency typically seen in marasmus, which features significant wasting but not necessarily edema. Kwashiorkor's hallmark is edema and low albumin despite sometimes only moderate reductions in total caloric intake.

**51.** (a) Erythromycin

Modern treatment options for typhoid fever (Salmonella typhi) commonly include fluoroquinolones (if sensitive), cephalosporins, azithromycin (a newer macrolide), amoxicillin, or co-trimoxazole (if the strain is sensitive). Erythromycin, however, is not reliably effective against S. typhi and is rarely recommended. Doxycycline may have some activity in milder cases or in areas with known sensitivity, although it is less commonly used than other agents.

**52.** (d) Tenofovir

Zanamivir and oseltamivir are neuraminidase inhibitors used in treating influenza A and B. Rimantadine (and amantadine) can be used against certain strains of influenza A (though resistance is common). Tenofovir is a nucleotide reverse transcriptase inhibitor used primarily against HIV and hepatitis B and has no clinical role in treating influenza.

**53.** (d) Staphylococcus aureus

Molecular tests (e.g., PCR) are routinely employed for CMV, HIV (via reverse transcription PCR for viral RNA or proviral DNA), and Mycobacterium tuberculosis (e.g., GeneXpert MTB/RIF). While Staphylococcus

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aureus can be detected by PCR (especially for MRSA screening), it is still more standardly and widely identified by culture methods. This question traditionally highlights that S. aureus is not typically diagnosed by routine DNA-targeted PCR in the same sweeping manner as TB, HIV, or CMV.

**54.** (c) Psoas abscess

A psoas abscess irritates the psoas muscle and typically presents with hip or lower back pain. The patient often holds the hip in flexion to reduce pain, leading to what appears as a "hip flexor spasm." In septic arthritis of the hip, there is also limited movement, but the key posture of psoas irritation is one of persistent flexion. Osteomyelitis of the femur or DVT does not classically cause a characteristic hip flexion spasm.

**55.** (c) Salmonella species

Salmonella (especially Salmonella enteritidis) is notorious for contaminating poultry products, including raw or undercooked eggs. Ingestion can lead to gastroenteritis with diarrhea, abdominal cramps, and fever. E. coli can contaminate various foods, norovirus is often linked to contaminated water/produce and person-to-person spread, while Clostridium botulinum produces botulism typically associated with improperly canned foods, not raw eggs.

**56.** (d) Schistosomiasis

Trypanosomiasis (Trypanosoma species), Leishmaniasis (Leishmania species), and Amoebiasis (Entamoeba histolytica) are all infections caused by protozoa. Schistosomiasis, on the other hand, is caused by trematode (fluke) worms (genus Schistosoma). These flatworms inhabit blood vessels, leading to chronic inflammatory disease of the intestines, liver, or urinary tract depending on the species.

**57.** (a) Needle Biopsy of the Pleura

Tuberculous pleural effusions often have exudative, lymphocyte-predominant fluid, low glucose, and elevated (but sometimes borderline) ADA. Pleural fluid smear for AFB is usually low yield, and even AFB culture can be less sensitive. While GeneXpert (Xpert MTB/RIF) on pleural fluid may help, the single best test with the highest diagnostic yield remains a pleural biopsy (e.g., by closed needle biopsy) for histopathology and culture. Granulomatous inflammation is highly indicative of TB.

**58.** (c) 1, 2 and 4

Poliovirus is an enterovirus in the picornavirus family (Statement 1). Patients can experience early muscle pains and transient fasciculations before paralysis (Statement 2). The CSF often shows a mild pleocytosis, sometimes starting with polymorphonuclear cells that later shift to lymphocytes (Statement 4). Tonsillectomy does not reduce risk of bulbar poliomyelitis; in fact, some evidence suggests it may predispose to more severe involvement (making Statement 3 incorrect).

**59.** (c) Easy hair pluckability

Marasmus involves severe caloric (energy) deficiency leading to marked wasting, including reduced triceps skinfold thickness and decreased mid-arm circumference. Serum albumin is often relatively preserved compared to kwashiorkor. Easy hair pluckability is a feature more characteristic of kwashiorkor, which also shows edema and low albumin. In marasmus, the child typically appears very thin without significant edema or the classic hair/skin changes seen in kwashiorkor.

**60.** (c) Hallucination

A hallucination is a false perception with no real external stimulus. In contrast, an illusion is a misperception or distortion of a real external stimulus, and a delusion is a fixed false belief not in keeping with cultural norms. Psychosis is a broader term referring to a loss of contact with reality, often encompassing hallucinations, delusions, or severely disorganized thinking.

**61.** (b) Clonazepam

Mainstays of smoking cessation therapy include nicotine replacement (gum, patches, lozenges), bupropion (an antidepressant that helps reduce nicotine cravings), and varenicline (a partial

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lung transplantation. These include advanced emphysema (as in end-stage COPD), idiopathic (primary) pulmonary hypertension, and certain chronic fibrotic or obstructive processes, such as obliterative bronchiolitis (post–lung transplant rejection or severe bronchiolar diseases). Thus, all three listed conditions can qualify for lung transplantation in selected patients.

**77.** (b) Flow/volume loops are recorded

Flow-volume loop analysis helps differentiate large (upper) airway obstruction from small (lower) airway disease. Fixed or variable obstructions in the trachea or main bronchi produce characteristic contour changes in the inspiratory or expiratory limbs of the loop. By contrast, measurements like $FEV_1$ or peak expiratory flow rate can document obstruction generally but do not specifically localize the site (large vs. small airways). The flow/time loop is less commonly used for localization.

**78.** (d) Irritable bowel syndrome

While inflammatory bowel diseases can cause episodic flares of diarrhea, irritable bowel syndrome (IBS) is much more prevalent overall. IBS often presents with chronic, intermittent (relapsing) abdominal pain and altered bowel habits—either diarrhea, constipation, or both in alternating fashion. It is a functional disorder with no identifiable structural pathology, but it is statistically the most common cause of chronic, relapsing diarrhea once organic causes are excluded.

**79.** (b) Diverticular disease

Large-volume, acute lower GI hemorrhage in adults—especially older individuals—is most frequently due to diverticular bleeding. Diverticula can erode into branches of the vasa recta, leading to sudden, often painless bleeding. Angiodysplasia can also cause bleeding but is somewhat less common. Ischemic colitis and inflammatory bowel disease typically produce more variable presentations. Therefore, diverticular disease remains the leading cause of severe acute lower GI bleeding.

**80.** (a) Modified Blatchford score

The Glasgow–Blatchford score (sometimes referred to in a "modified" form) is specifically designed to assess the severity of an upper GI bleed and predict the need for intervention such as endoscopy, transfusions, or surgery. The Child-Pugh and MELD scores are primarily used for assessing severity of chronic liver disease and cirrhosis. The Balthazar score relates to the severity of pancreatitis on imaging. For acute upper GI bleeding, the Blatchford score is the well-recognized stratification tool.

**81.** (d) Vitamin C

"Corkscrew" or "swan-neck" hairs are a classic cutaneous sign of scurvy, caused by vitamin C (ascorbic acid) deficiency. Collagen synthesis is impaired, leading to brittle hair with a coiled appearance, perifollicular hemorrhages, gum bleeding, and poor wound healing. Deficiencies of vitamins A, E, or K each have distinct clinical manifestations (night blindness or xerophthalmia, neurologic problems or hemolysis, and coagulopathy, respectively), rather than corkscrew hair.

**82.** (d) 1, 2 and 3

Renal biopsy is indicated to diagnose specific glomerular or interstitial pathologies when noninvasive tests do not suffice. Adults with nephrotic syndrome generally require biopsy to determine the underlying cause. Children with "typical" minimal change disease might be treated empirically, but if features are atypical or the response is unusual, a biopsy is warranted. Patients with progressive chronic kidney disease yet normal kidney size on imaging often undergo biopsy to identify treatable causes (e.g., glomerulonephritis).

**83.** (d) 1, 2 and 3

Contrast-induced nephropathy (CIN) is especially likely in patients who receive older, high-osmolal contrast agents, as well as in those with comorbidities such as diabetes mellitus or chronic kidney disease. Multiple myeloma also increases risk because of the high protein load and potential renal impairment. Modern low- or iso-osmolal contrast media reduce the incidence but do not eliminate the risk, which remains

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syndromes involving intestines, skin, or other tissues, not classical hematuria.

**69.** (d) African Trypanosomiasis

The Tsetse fly (genus Glossina) is well known for transmitting African trypanosomes (Trypanosoma brucei gambiense and T. b. rhodesiense), which cause African sleeping sickness. Leishmaniasis is transmitted by sandflies, Chagas disease by triatomine ("kissing") bugs, and dengue by Aedes mosquitoes. African Trypanosomiasis can lead to hemolymphatic and CNS involvement, culminating in the classic "sleeping sickness" if untreated.

**70.** (c) Invasive mechanical ventilation

An unconscious patient with pneumonia and severe hypoxemia ($PaO_2 = 50$ mm Hg) requires definitive airway protection and adequate ventilation. Non-invasive ventilation (NIV) typically necessitates a cooperative patient with intact airway reflexes. Because he is unconscious, the risk of aspiration is high, and he likely cannot protect his airway. Invasive mechanical ventilation ensures oxygenation, ventilation, and airway protection. Nasal cannula would be insufficient; "no respiratory support" is clearly inappropriate.

**71.** (b) Less than 0.5 ml/kg/hour

A standard definition of oliguria in adults is a urine output below 0.5 ml/kg/hour. This threshold is commonly used in critical care to identify possible acute kidney injury or inadequate renal perfusion. Less than 200 ml in 24 hours would be more appropriately called "anuria" or near-anuria. "Less than 1 ml/kg/hour" is a higher cutoff and not the usual definition. Any decrease from baseline can be concerning, but does not itself define oliguria.

**72.** (c) Bilateral plantar response – Mute or Absent

The universally accepted clinical criteria for brain death include coma (unresponsiveness), absence of brainstem reflexes (pupillary, corneal, oculocephalic, gag, etc.), and apnea test showing no drive to breathe. While pupils fixed and unresponsive, absent corneal reflex, and absent gag reflex are key components, the plantar reflex (a spinal reflex) can sometimes remain present due to preserved spinal cord activity. Therefore, "bilateral plantar response – mute or absent" is not a consistent or required criterion for diagnosing brain death.

**73.** (b) I.V. Thiamine

Ophthalmoplegia, ataxia, and confusion classically describe Wernicke's encephalopathy due to thiamine (vitamin $B_1$) deficiency, typically seen in chronic alcoholics. Prompt administration of intravenous thiamine is critical to prevent progression to Korsakoff syndrome (profound memory deficits). Giving glucose before thiamine can worsen the deficit. Mannitol is for reducing intracranial pressure and IV immunoglobulins are for immune-mediated conditions—neither addresses the fundamental problem of thiamine deficiency.

**74.** (b) AV Nodal Reentry Tachycardia (AVNRT)

Among the various types of paroxysmal supraventricular tachycardia (PSVT), AV Nodal Reentrant Tachycardia is the most frequent. It involves a reentry circuit within or around the AV node. Accessory pathway–mediated tachycardias (e.g., AVRT in WPW syndrome) are less common. Junctional ectopic tachycardia and accelerated junctional rhythms generally arise from subsidiary pacemakers or specific pediatric contexts, not typically the classic PSVT scenario encountered in adults.

**75.** (c) Permanent pacemaker

Sinoatrial (SA) node dysfunction—often termed "sick sinus syndrome"—may present with bradycardia, fatigue, syncope, or tachy-brady syndrome. While temporary measures (like IV atropine or isoprenaline) can transiently increase heart rate, definitive management for persistent, symptomatic SA nodal disease typically requires a permanent pacemaker to maintain adequate heart rates and prevent symptomatic bradycardia or pauses.

**76.** (d) 1, 2 and 3

End-stage lung diseases that are refractory to medical management can be indications for

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nicotinic receptor agonist). Clonazepam, a benzodiazepine, is used for anxiety, seizure disorders, etc. and is not indicated for smoking cessation. While benzodiazepines may help with acute anxiety, they do not specifically target nicotine dependence or cravings.

**62.** (b) Hypertonia

Organophosphorus poisoning causes an excess of acetylcholine at muscarinic and nicotinic receptors, leading to salivation, lacrimation, urination, diarrhea, GI upset, emesis (SLUDGE) as well as bronchorrhea and bronchospasm (muscarinic), and muscle fasciculations with weakness (nicotinic). CNS effects such as confusion may also occur. Ultimately, there is more commonly flaccid paralysis rather than "hypertonia." Hence, "hypertonia" is not a typical finding, making it the correct "EXCEPT" choice.

**63.** (d) Cocaine

Miosis (constricted pupils) occurs commonly with opioids, organophosphorus compounds (via muscarinic stimulation), and clonidine (central $\alpha_2$-agonist effect). Cocaine, on the other hand, blocks the reuptake of norepinephrine and can stimulate alpha-1 receptors in the iris dilator muscle, causing mydriasis (dilated pupils). Therefore, cocaine poisoning typically results in large pupils, making it the exception among the listed options.

**64.** (a) Amphetamines

Symptoms of sympathomimetic excess (tachycardia, hypertension, tremors, hallucinations, possible hyperthermia, and seizures) are classic for amphetamine-type stimulant intoxication. By contrast, benzodiazepine (diazepam) or opioid (oxycodone) overdose typically causes central nervous system depression, respiratory depression, and reduced blood pressure. Ethanol intoxication also generally induces sedation rather than seizures and hallucinations (although withdrawal can cause these but under different circumstances). Thus, amphetamine use best fits the described clinical picture.

**65.** (d) Phosphine

Aluminium phosphide tablets (often used as a fumigant) react with moisture and stomach acid to release phosphine gas ($PH_3$), which is extremely toxic. Phosphine impairs cellular respiration by inhibiting cytochrome c oxidase, leading to profound cardiovascular collapse, metabolic acidosis, and multi-organ failure. Neither phosgene, chlorine, nor simple inorganic phosphates are primarily responsible for the acute lethal toxicity; it is phosphine that causes the classic severe presentation.

**66.** (c) Whole blood clotting time

Saw-scaled vipers (Echis carinatus) have predominantly hemotoxic venom, causing coagulopathy and bleeding tendencies. Hence, monitoring coagulation parameters—particularly the whole blood clotting time or 20-minute whole blood clotting test—is critical to detect venom-induced consumptive coagulopathy. Neurotoxic signs (e.g., respiratory paralysis) are more characteristic of cobra or krait bites, whereas muscle enzyme elevations are more relevant for severe myotoxic snake venoms. Therefore, clotting time measurement is key in saw-scaled viper envenomation.

**67.** (a) Flaccid paralysis

Cobra venom contains potent postsynaptic neurotoxins that block neuromuscular transmission, leading to progressive skeletal muscle weakness and ultimately flaccid paralysis. In contrast, viper bites often cause hemorrhage and coagulopathy (hemotoxic effects). Myolysis (severe muscle breakdown) is more characteristic of certain sea snakes or some other species. Cardiac toxicity is not a classic hallmark of cobra envenomation. Therefore, flaccid paralysis is the key clinical finding in cobra bites.

**68.** (b) Schistosoma hematobium

Schistosoma hematobium primarily affects the urinary system, often causing hematuria ("blood in urine") due to granulomatous lesions in the bladder and ureters. This leads to chronic urinary tract complications such as bladder wall fibrosis and an increased risk of squamous cell carcinoma. Strongyloides, Toxocara, and Gnathostoma typically cause different clinical

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highest in individuals with these pre-existing risk factors.

**84.** (b) Nephritis

Dysmorphic (or "glomerular-type") RBCs in the urine strongly suggest a glomerular origin of hematuria, as the RBCs become distorted while passing through the damaged glomeruli. This finding is characteristic of inflammatory or proliferative renal pathologies—commonly referred to under the umbrella of "nephritis" (e.g., acute glomerulonephritis, rapidly progressive GN). In contrast, infections of the lower urinary tract or pyelonephritis, stones, or simple UTIs tend to show isomorphic RBCs and possibly WBCs/bacteria, not dysmorphic RBCs.

**85.** (a) Small cell lung cancer

SIADH commonly arises from ectopic ADH production by malignancies, and small cell lung cancer is by far the most frequent culprit among lung neoplasms. These tumors have neuroendocrine properties that predispose them to inappropriate secretion of antidiuretic hormone (ADH). As a result, patients develop euvolemic hyponatremia, low serum osmolality, and inappropriately high urine osmolality. Other subtypes of lung cancer (e.g. squamous, large cell, adenocarcinoma) may less commonly produce ectopic hormones, but small cell lung cancer is classically implicated in SIADH.

**86.** (b) Pneumothorax

A pneumothorax introduces air into the pleural space, creating a "silent" hemithorax (absent breath sounds) on auscultation and a hyper-resonant (drum-like) note on percussion. In contrast, a large pleural effusion typically produces diminished breath sounds but a dull percussion note. Bronchial asthma causes diffuse wheezing, and lobar consolidation yields bronchial breathing with dullness. Therefore, "silent" plus "resonant" best points to pneumothorax.

**87.** (b) Duchenne's dystrophy

Gower's sign is classically associated with Duchenne Muscular Dystrophy (DMD). It demonstrates proximal lower limb muscle weakness: the child must "walk" his hands up his legs to rise from the floor. DMD results from a mutation in the dystrophin gene, causing severe progressive muscle degeneration starting in early childhood. Peroneal muscle atrophy, Friedreich ataxia, or cerebellar disorders do not typically exhibit Gower's maneuver.

**88.** (b) Hypercalcemia

Common urgent indications for dialysis (renal replacement therapy) include:

1. Intractable metabolic acidosis (pH < 7.2–7.25)
2. Life-threatening hyperkalemia ($K^+$ typically >6.0 or with ECG changes)
3. Significant volume overload unresponsive to diuretics
4. Uremic complications (encephalopathy, pericarditis)

While very severe hypercalcemia might require dialysis in extremely rare settings, it is not one of the classic triggers in the usual "AEIOU" (Acidosis, Electrolytes [$K^+$], Intoxications, Overload, Uremia). Thus (b) is the "EXCEPT."

**89.** (c) Typhoid

Typhoid fever (due to Salmonella Typhi) relies primarily on bacterial invasion and multiplication in the intestines and reticuloendothelial system, not on a secreted exotoxin. In contrast, botulism (Clostridium botulinum), diphtheria (Corynebacterium diphtheriae), and tetanus (Clostridium tetani) are classic examples of diseases driven by potent exotoxins. Botulinum toxin causes neuromuscular blockade, diphtheria toxin causes local and systemic toxicity, and tetanospasmin disrupts inhibitory neurotransmission, whereas Salmonella Typhi lacks a major virulence exotoxin.

**90.** (c) Clonidine

Tricyclic antidepressants, cocaine, and amphetamines all increase sympathetic or anticholinergic tone, leading to mydriasis (dilated pupils). Clonidine is an $\alpha_2$-adrenergic agonist that diminishes sympathetic outflow and more commonly results in miosis (pupil constriction). Clinically, severe clonidine overdose is associated with CNS depression and

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Gastric lavage is contraindicated in corrosive (caustic) poisoning due to the risk of perforation and further esophageal damage, and generally avoided with hydrocarbons (such as turpentine) because of aspiration risk and limited benefit. Organophosphorus or iron poisoning are not absolute contraindications if the patient presents within a safe time window, although careful assessment is still required. Therefore, items 1 (corrosive) and 4 (turpentine) are the definitive contraindications on this list.

**106.** (c) Intravenous dexamethasone

In traumatic brain injury with high intracranial pressure (ICP), recommended measures include:

1. Elevating the head of the bed (improves venous drainage)
2. Ensuring adequate ventilation and sometimes hyperventilation
3. Using hypertonic saline or mannitol to lower ICP

Dexamethasone, however, is not standard for acute head trauma; studies show no survival or outcome benefit and possible harm. Steroids are useful for vasogenic edema (e.g., brain tumors, abscesses) but not for hemorrhagic or diffuse traumatic injury.

**107.** (c) Autism

Autism Spectrum Disorder is characterized by deficits in social communication/interaction and restricted or repetitive behaviors. Some children may achieve normal early motor milestones but show a lack of social engagement ("aloof"), delayed or atypical language development, and limited social reciprocity. Selective mutism usually manifests as speaking normally in some environments but remaining silent in others. ADHD presents with inattention, hyperactivity, and impulsivity. Phonological disorder affects speech sounds but not social aloofness.

**108.** (a) It can be safely administered in pregnancy

Current recommendations avoid giving HPV vaccine during pregnancy as safety data are limited, hence it is not deemed "safe" to administer in pregnancy. The usual recommended age to start HPV vaccination is 9–14 years (often quoted as around 11–12). Catch-up vaccination is advised up to 26 years (or in some guidelines up to 45 years) but is most beneficial before sexual debut. HPV vaccines are indeed given intramuscularly, usually in the deltoid.

**109.** (a) DTPw booster

According to many immunization schedules (including India's National Program), children receive a DPT booster around 5–6 years of age (the second booster after the first booster at 16–24 months). Tdap is often introduced at older ages (e.g., 11–12 years) to reduce vaccine reactogenicity. A 6-year-old who is otherwise up to date typically is due for that second DPT (whole-cell) booster. TT alone is given later, such as at 10 or 16 years, based on local guidelines.

**110.** (b) Temper tantrums

"Time-out" is a behavior-management technique often recommended for children exhibiting disruptive or attention-seeking behaviors such as temper tantrums. The child is briefly removed from the triggering context and placed in a neutral, safe space, thereby reducing reinforcement for the negative behavior. It is less useful for tics, stuttering, or breath-holding spells, which have different underlying mechanisms and require other interventions. Time-out focuses on teaching self-regulation and consistent consequences for undesired actions.

**111.** (c) Hepatitis A vaccine

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Mission Indradhanush is India's government initiative to expand immunization coverage by providing vaccines for diphtheria, pertussis, tetanus, polio, tuberculosis, measles, hepatitis B, and Haemophilus influenzae type b (among others). Japanese Encephalitis vaccine is included in endemic regions. Hepatitis A vaccine, however, is not part of the standard schedule under this mission. Thus, it is the exception.

**112.** (a) Hepatitis B Immunoglobulin (HBIG) and Hepatitis B vaccine at birth

A neonate born to an HBsAg-positive mother should receive both Hepatitis B Immunoglobulin (HBIG) and the first dose of the Hepatitis B

**98.** (d) None of these

These symptoms suggest tumor lysis syndrome (TLS): hyperphosphatemia, hypocalcemia (causing tetany, QT prolongation), hyperkalemia, and hyperuricemia. Optimal management includes:

1. Adequate IV fluids (to maintain renal perfusion and flush out metabolites)
2. Phosphate binders (to control hyperphosphatemia)
3. Rasburicase (to lower uric acid).

All three measures are beneficial rather than detrimental. Hence "none of these" is the correct choice as none of the listed therapies would worsen the child's condition.

**99.** (b) Intravenous antibiotics

Acute croup (laryngotracheobronchitis) is typically a viral infection (often parainfluenza), so routine antibiotics are not indicated unless there is a strong suspicion of secondary bacterial infection. Mainstays of therapy for moderate to severe croup with stridor or respiratory distress include:

1. Corticosteroids (dexamethasone)
2. Nebulized epinephrine for significant airway compromise
3. Careful sedation may occasionally help an extremely anxious child, though with caution.
4. IV antibiotics offer no routine benefit in straightforward viral croup.

**100.** (c) Waves 'bye-bye'

By around 9 months, many infants learn to wave "bye-bye," clap hands, and show more interactive gestures. Cruising around furniture often emerges closer to 9–10 months, and a mature (neat) pincer grasp is more reliably seen between 9–10 months (though sometimes considered slightly later). Babbling "mama/dada" non-specifically can occur around 9 months, but specifically referring to mother as "mama" with meaning may come a bit later. Waving "bye-bye" is the most typical milestone singled out at 9 months.

**101.** (b) Erythema toxicum

Erythema toxicum neonatorum is a benign, self-resolving rash seen in healthy term newborns, usually appearing in the first week of life as small erythematous papules/pustules. Mild physiologic jaundice typically arises after 24 hours, so jaundice at 20 hours is suspicious. Direct bilirubin of 3.0 mg/dL is abnormally high in a term newborn, suggesting cholestasis. Neonatal hypotonia is not a normal finding and may indicate underlying pathology.

**102.** (c) Positive pressure ventilation

Neonatal resuscitation guidelines emphasize heart rate as a key decision point. Despite the baby appearing "pink" and breathing, a heart rate below 100/min is inadequate. For heart rates between 60–100 bpm, positive pressure ventilation is indicated to improve ventilation and raise the heart rate. Chest compressions are initiated if HR <60 bpm despite adequate ventilation. IV epinephrine is given if HR remains below 60 bpm after coordinated ventilation and compressions.

**103.** (d) 60 months

Copying a triangle and confidently skipping typically appear around 5 years (60 months). By age 3 (36 months), children can copy a circle; by age 4 (48 months), they can copy a cross or a square. Naming several colors correctly, dressing/undressing with minimal help, and skipping smoothly usually solidify around the 5-year mark. Thus, these milestones align best with a 60-month-old child's development.

**104.** (b) Unable to sit without support by 10 months

Typical gross motor development includes sitting without support by around 6–8 months. Most standard milestone charts consider inability to sit unsupported by 9–10 months a significant concern, often termed a "red flag." Although failing to walk by 15 months can also be worrisome, many guidelines allow up to about 18 months before labeling it a major red flag. No vocalization by 4 months is less standardized as an absolute red flag, and single words often appear by around 12 months but can vary.

**105.** (d) 4 and 1

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(d) Vitamin B12

**22.** Obstructive lung function tests are seen in which of the following conditions?
(a) Obesity
(b) Kyphoscoliosis
(c) Pleural effusion
(d) Asthma

**23.** In which of the following conditions is there an increase in lung diffusion capacity?
(a) Emphysema
(b) Idiopathic pulmonary fibrosis
(c) Alveolar haemorrhage
(d) Pulmonary oedema

**24.** Which one of the following statements is correct?
(a) Omalizumab is an antileukotriene
(b) Omalizumab is a blocking antibody that neutralises circulating IgE
(c) Omalizumab is a newer long acting anticholinergic agent
(d) Omalizumab is once a day long acting beta-2 agonistic

**25.** Widespread concave ST segment elevation and PR depression in most leads except aVR lead favours the diagnosis of:
(a) Acute myocardial infarction
(b) Pericarditis
(c) Digoxin toxicity
(d) Hypertrophic obstructive cardiomyopathy

**26.** A known case of lepromatous leprosy was initiated on treatment. She developed painful erythematous papules with fever and lymphadenopathy. What is the likely reactional state?
(a) Type 1 lepra reaction
(b) Type 2 lepra reaction
(c) Lucio's phenomenon
(d) Lupus pernio

**27.** Which of the following is not true regarding congestive cardiac failure in the elderly?
(a) Incidence rises with age
(b) Common causes include coronary artery disease and hypertension
(c) Diastolic dysfunction is often present
(d) Loop diuretics are usually well tolerated

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**28.** Multidrug resistant tuberculosis is defined as:
(a) At least resistance to three or more antitubercular drugs
(b) At least resistance to Isoniazid, Streptomycin and Ethambutol
(c) At least resistance to Isoniazid and Rifampicin
(d) At least resistance to Streptomycin and Rifampicin

**29.** Aortic stenosis is associated with:
(a) Pulsus paradoxus
(b) Pulsus parvus et tardus
(c) Pulsus alternates bisferens
(d) Pulsus bigeminus

**30.** Which of the following is associated with hypercoagulable state?
1. Protein C deficiency
2. Antiphospholipid syndrome
3. Homocystinemia

Select the correct answer using the code given below:
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**31.** A 20 year old male walked into outpatient department with high grade fever, cough and chest pain for one day. Chest X-ray showed consolidation of left upper zone. His respiratory rate is 22/minute, pulse rate 96/minute, BP systolic 120 mmHg and blood urea 18 mg/dl. What is his CURB score?
(a) 0
(b) 1
(c) 2
(d) 3

vaccine within 12 hours of birth to prevent perinatal transmission. Antiviral therapy (e.g., lamivudine, tenofovir) is reserved for maternal treatment or later use in certain neonatal infection scenarios, but immediate newborn prophylaxis is HBIG + vaccine.

**113.** (d) At 3 years

Children with Down syndrome are at risk for atlantoaxial or atlanto-occipital instability. Guidelines vary slightly, but many recommend screening neck X-rays (often flexion–extension views) around the age of 3 to 5 years to check for excessive movement between the atlas and axis. Doing it at birth, 1 year, or 2 years is less commonly recommended unless there are clinical signs of instability. By 3 years, cervical anatomy is more mature, making evaluation more accurate.

**114.** (c) Knee

In older children, the left-hand/wrist X-ray is the traditional standard to assess skeletal maturity. However, for newborns, epiphyseal development is best visualized around the knee (distal femoral and proximal tibial epiphyses). The presence or size of certain ossification centers in the knee correlates with gestational maturity. Hence, knee X-ray is most commonly used to assess bone age in neonates, rather than the wrist or elbow.

**115.** (d) Second molar

Permanent teeth eruption timelines often parallel stages of pubertal development. The second permanent molar, typically erupting around 11–13 years of age (sometimes called the "12-year molar"), has been noted to coincide relatively closely with the average age of menarche in many populations. First molars erupt much earlier (around 6–7 years), and premolars also tend to appear before the typical menarche window.

**116.** (a) Deficit

The RBSK initiative in India targets four broad categories in children:

1. Defects at birth (congenital anomalies),
2. Diseases (childhood illnesses like rheumatic heart disease),
3. Deficiencies (e.g. anemia, vitamin deficiencies),
4. Developmental delays and disabilities.

"Deficit," as listed in option (a), is not specifically one of these recognized "4 Ds."

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**117.** (b) 1–4 years

Global data indicate that toddlers aged 1–4 years have some of the highest drowning rates, largely because of their natural curiosity, lack of supervision near water (including household containers or pools), and inability to rescue themselves. Infants under 1 year can drown but are more often in controlled environments. Older children (school-age) often have swimming skills or better supervision. Thus, many drowning prevention programs focus on vigilant adult supervision and safety measures for the 1–4 year group.

**118.** (b) Half-normal saline (N/2) in 5% dextrose at 15 mL/kg over 60 minutes

Children with severe malnutrition are more prone to fluid overload and heart failure if rehydrated too aggressively. The WHO guidelines recommend cautious IV rehydration with a half-strength saline plus 5% dextrose solution, at a slower rate—typically 15 mL/kg over 1 hour—to correct shock. Ringer's lactate or full-strength saline boluses are standard in typical dehydration, but in severely malnourished children, lower-volume and lower-sodium regimens plus careful monitoring are crucial.

**119.** (c) 50%

Hemophilia A is an X-linked recessive disorder. A female carrier has one affected X chromosome ($X^h$) and one normal X. A normal male is (X, Y). Each son has a 50% chance of inheriting the mother's affected X and being hemophilic ($X^hY$). Each daughter has a 50% chance of becoming a carrier ($X^hX$). Thus, for male offspring, the probability of hemophilia is 1 in 2.

**120.** (d) 36.0 – 36.4 °C

According to standard neonatal thermal care guidelines, a normal axillary temperature is

# QUESTION PAPER 2017

1. Which of the following is NOT correct?
   (a) Hepatitis A does not lead to massive hepatic necrosis
   (b) Hepatitis B vaccination is part of universal childhood vaccination
   (c) Hepatitis C is commonest cause of transfusion transmitted hepatitis
   (d) Hepatitis E carries very high mortality in pregnant women

2. Which of the following antihypertensive drugs is contraindicated in pregnancy?
   (a) Hydralazine
   (b) Amlodipine
   (c) Labetalol
   (d) Ramipril

3. Which of the following least predisposes to infective endocarditis?
   (a) Ventricular septal defect
   (b) Atrial septal defect
   (c) Patent ductus arteriosus
   (d) Tetralogy of Fallot

4. A 60 year old male with Marfan's syndrome comes to emergency department with severe generalised tearing pain localised to chest anteriorly and inter scapular region, sweating and weakness. On examination, his BP is 200/140 mm Hg. X ray chest shows widening of superior mediastinum. ECG shows sinus tachycardia. What is the most likely diagnosis?
   (a) Acute pulmonary embolism
   (b) Dissection of aorta
   (c) Acute myocardial infarction
   (d) Acute pericarditis

5. A patient who is allergic to penicillin can be prescribed which of the following drugs for prophylaxis of acute rheumatic fever?
   (a) Ciprofloxacin
   (b) Erythromycin
   (c) Cotrimoxazole
   (d) Tetracycline

6. QT interval is prolonged in:
   (a) Hypocalcaemia
   (b) Hyperkalaemia
   (c) Hypermagnesaemia
   (d) Digoxin therapy

7. Differential cyanosis is seen in:
   (a) Atrial septal defect with pulmonary arterial hypertension
   (b) Ventricular septal defect with pulmonary arterial hypertension
   (c) Patent ductus arteriosus with pulmonary arterial hypertension
   (d) Fallot tetralogy

8. Wilson's disease is characterised by all EXCEPT:
   (a) Increased urinary copper
   (b) Increased hepatic copper
   (c) Deposition of copper in Descemet's membrane
   (d) Increased serum ceruloplasmin

9. Following drugs are used for H.Pylori eradication EXCEPT:
   (a) Amoxycillin
   (b) Bismuth subsalicylate
   (c) Tetracycline
   (d) Cephalexin

10. A 45 year old female comes to you with dysphagia. She is found to have anaemia and koilonychia. Most likely diagnosis is:
   (a) Plummer Vinson syndrome
   (b) Boerhaave syndrome
   (c) Carcinoma oesophagus
   (d) Reflux oesophagitis

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pinpoint pupils, making it the exception among the listed agents in terms of pupil dilation.

**91.** (a) Nitrofurantoin

Nitrofurantoin, used for treating urinary tract infections, is well-known for causing pulmonary reactions, including hypersensitivity pneumonitis and eosinophilic lung infiltrates (pulmonary eosinophilia). Symptoms can range from acute cough and fever to chronic interstitial changes with prolonged use. While other drugs sometimes provoke allergic or eosinophilic responses, nitrofurantoin is classically associated with acute or subacute lung toxicity featuring eosinophilia on labs or histopathology.

**92.** (d) Pancreatic cancer

CA 19-9 is a carbohydrate antigen most commonly elevated in pancreatic adenocarcinoma. While it can also be elevated in cholangiocarcinoma or other biliary tract malignancies, it is particularly linked to pancreatic tumors. It is not a primary screening test for the general population but can help monitor disease progression or response to therapy in confirmed pancreatic cancer. Other markers include PSA for prostate cancer, CA-125 for ovarian cancer, and CEA for some colorectal and other malignancies.

**93.** (d) Malassezia furfur

Tinea (pityriasis) versicolor presents as hypo- or hyperpigmented scaly patches, commonly on the trunk and upper arms. It is caused by Malassezia furfur, a lipophilic yeast that is part of normal skin flora but can overgrow under certain conditions (warm, humid climates, oily skin, immunosuppression). By contrast, tinea corporis or other "ringworm" infections are typically caused by dermatophytes like Trichophyton. Candida albicans and Streptococci are unrelated to classic pityriasis versicolor.

**94.** (c) Hypothermia

An Osborn wave (also known as a J wave) is a positive deflection at the J point on ECG, most famously associated with hypothermia (core temperature typically below 30–32 °C). It may also appear in other conditions like hypercalcemia or Brugada syndrome variants, but hypothermia is the classic cause. These waves become more prominent as body temperature falls, reflecting altered ventricular repolarization in the cold.

**95.** (c) Sulfasalazine

In ankylosing spondylitis, axial symptoms often respond best to NSAIDs and TNF inhibitors (biologics). However, for peripheral joint involvement (e.g. peripheral arthritis), a traditional DMARD like sulfasalazine can be effective. Methotrexate and leflunomide are used more for rheumatoid arthritis; hydroxychloroquine is also an RA or lupus drug. While methotrexate is sometimes tried off-label, sulfasalazine is generally recognized as the preferred conventional DMARD for peripheral manifestations in ankylosing spondylitis.

**96.** (c) Nitroprusside

In acute aortic dissection, rapid blood pressure control is crucial. Typically, IV β-blockade (e.g., esmolol, labetalol) is started first to reduce shear stress (dP/dt). If further BP reduction is needed, IV nitroprusside is added. Among the listed choices, nitroprusside (along with a beta-blocker) is the classic "drug of choice" for immediate control of severe hypertension in dissection. Pure vasodilators (like hydralazine or amlodipine) without concomitant beta-blockade can increase the aortic wall shear, so caution is mandatory.

**97.** (c) Insulin infusion

These ECG changes (peaked T waves, widened QRS) strongly indicate severe hyperkalemia, likely from muscle injury and potassium release. Immediate therapy includes:

1. IV calcium (to stabilize cardiac membranes)
2. Insulin (with glucose) to shift potassium intracellularly
3. Other measures like beta-2 agonists or sodium bicarbonate if acidotic.

Although calcium is typically the first agent for cardioprotection, it is not listed here. Among the provided options, insulin infusion (plus dextrose) is the most urgent step to lower serum $K^+$.

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**11.** Chest tube insertion should be considered in a patient with parapneumonic effusion include the following EXCEPT:
(a) Loculated pleural effusion
(b) Positive Gram stain/culture of pleural fluid
(c) Pleural effusion is less than 10 mm thickness on decubitus
(d) Pleural fluid pH less than 7.20

**12.** A patient underwent hip replacement surgery. On fourth post-operative day, he had dyspnoea, pleuritic pain and haemoptysis. Most likely diagnosis is:
(a) Pulmonary embolism
(b) Pneumonia
(c) Pulmonary oedema
(d) Pericarditis

**13.** A 55 year old male with a history of chronic obstructive pulmonary disease was rushed to emergency department with increasing shortness of breath, fever and a productive cough with yellow green sputum. He has difficulty in communicating because of his inability to complete a sentence. Measurement of arterial blood gas shows pH 7.3, $PaCO_2$ 68 mmHg, $HCO_3$ 28 mmol/L, and $PaO_2$ 60 mmHg. How would you interpret this?
(a) Respiratory acidosis, uncompensated
(b) Respiratory alkalosis, uncompensated
(c) Respiratory acidosis, partially compensated
(d) Respiratory alkalosis, partially compensated

**14.** A 40 years old woman presents with hematuria, ecchymoses and menorrhagia of six months duration. What is the most likely diagnosis?
(a) Haemophilia A
(b) Haemophilia B
(c) Idiopathic thrombocytopaenic purpura
(d) Henoch Schonlein purpura

**15.** Which of the following heavy metal poisoning strictly affects motor nerve ?
(a) Cadmium
(b) Mercury
(c) Lead
(d) Thallium

**16.** A patient develops skin necrosis 3 days after being started on warfarin for deep vein thrombosis. What is the most likely cause?
(a) Antiphospholipid antibody syndrome
(b) Protein C deficiency
(c) Disseminated intravascular coagulation
(d) Thrombotic thrombocytopaenic purpura

**17.** A 15 year old boy is brought to emergency with two days history of headache, vomiting and altered sensorium. His BP is 70 mmHg systolic and he has ecchymoses on his skin. Most likely organism causing his condition is:
(a) Haemophilus influenzae
(b) Listeria monocytogenes
(c) Neisseria meningitidis
(d) Streptococcus pneumoniae

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**18.** A child presents with episode of hematuria soon after respiratory tract infection. What is the most likely diagnosis?
(a) IgA nephropathy
(b) Wegener granulomatosis
(c) Post streptococcal glomerulonephritis
(d) Churg Strauss syndrome

**19.** In microalbuminuria, 24 hours urinary albumin is:
(a) 8-10 mg
(b) 30-300 mg
(c) 300-3000 mg
(d) 3000 mg

**20.** Following are complications of acute renal failure EXCEPT:
(a) Intravascular volume overload
(b) Hyponatraemia
(c) Hyperkalaemia
(d) Metabolic alkalosis

**21.** Deficiency of which vitamin causes subacute combined degeneration of spinal cord?
(a) Vitamin B1
(b) Vitamin B6
(c) Vitamin B2

around 36.5–37.5 °C. Temperatures between 36.0 and 36.4 °C are categorized as “cold stress” (mild hypothermia). Below 36.0 °C, the newborn enters moderate to severe hypothermia ranges. Prompt, gentle warming measures (Kangaroo Mother Care, radiant warmers, etc.) are crucial to prevent complications of hypothermia.

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**32.** Which of the following conditions is an autosomal dominant disorder?
(a) G-6PD deficiency
(b) Sickle cell disease
(c) Fanconi anaemia
(d) Marfan syndrome

**33.** Consider the following statements regarding the treatment of bronchial asthma:
1. Tablets of $\beta_2$ adrenoceptor agonist are better than aerosol therapy
2. Inhaled corticosteroids are contraindicated in acute severe asthma
3. Oral steroids may be necessary for severe acute asthma
4. Anticholinergic bronchodilators are muscarinic antagonists
5. Salmeterol and formoterol are highly selective and potent long acting $\beta_2$ adrenoceptor agonists

Which of the statements given above are true?
(a) 1, 4 and 5 only
(b) 3, 4 and 5 only
(c) 1, 2 and 5 only
(d) 1, 2 and 3 only

**34.** Acute massive pulmonary embolism is manifested by the following EXCEPT:
(a) Reduced $PaO_2$ and reduced $PaCO_2$
(b) Pulmonary opacities in chest X ray
(c) $S_1Q_3T_3$ with RBBB in ECG
(d) Reduced cardiac output and acute right heart failure

**35.** The side effects of isoniazid include the following EXCEPT:
(a) Hepatitis
(b) Rash
(c) Peripheral neuropathy
(d) Hyperuricaemia

**36.** A patient of COPD develops a large pneumothorax during a violent bout of coughing. The most appropriate management would be:
1. Simple aspiration
2. Tube thoracostomy
3. Pleurodesis

Which of the above is/are correct?
(a) 1 and 2
(b) 2 and 3
(c) 1 and 3
(d) 2 only

**37.** Carbon dioxide tension ($PaCO_2$) in arterial blood at sea level is:
(a) Less than 25 mm of Hg
(b) 25-35 mm of Hg
(c) 35-45 mm of Hg
(d) 45-55 mm of Hg

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**38.** The volume of fresh air entering the alveoli each minute is called as:
(a) Dead space
(b) Diffusing capacity
(c) Alveolar ventilation
(d) Ventilation perfusion

**39.** Exacerbations of bronchial asthma that occur with little or no warning are called:
(a) Brittle asthma
(b) Acute severe asthma
(c) Poorly controlled asthma
(d) Nocturnal asthma

**40.** Which of the following constituents of antacid can cause constipation?
(a) Magnesium hydroxide
(b) Aluminium hydroxide
(c) Calcium carbonate
(d) Sodium bicarbonate

**41.** 'TIPS' procedure in the treatment of cirrhosis liver stands for:
(a) Transvenous intrahepatic portal shunt
(b) Transvenous intraabdominal portal shunt
(c) Transjugular intrahepatic portosystemic shunt
(d) Transjugular intrahepatic peritoneal shunt

**42.** The drug of choice in the treatment of oesophageal candidiasis is:
(a) Fluconazole
(b) Nystatin oral suspension

**101.** The Pradhan Mantri Jan Dhan Yojana aims to promote:
(a) Financial inclusion
(b) Collateral security in housing for rural and urban poor
(c) Cashless financial transactions
(d) Financial literacy

**102.** The objective of the 'Paramparagat Krishi Vikas Yojana' is to promote:
(a) Conservation of groundwater
(b) Cultivation of wild varieties of cereal crops
(c) Dryland farming
(d) Organic farming

**103.** Which among the following is a very water intensive crop?
(a) Grapes
(b) Finger millet
(c) Sugarcane
(d) Wheat

**104.** Which of the following does nanoscience have applications?
1. Drug delivery
2. Electronics
3. Food processing
4. Water purification

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 1 and 3 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

**105.** Which of the following is/are the exclusive powers of the Lok Sabha as compared to Rajya Sabha?
1. Introducing money bills
2. Passing a motion of no-confidence against the Council of Ministers

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**106.** Who among the following do not participate in the election of the President of India?
(a) Elected members of Rajya Sabha
(b) Elected members of Vidhan Sabhas
(c) Elected members of Lok Sabha
(d) Elected members of Vidhan Parishads

**107.** There is a popular opposition to the use of 'plastic microbeads'. In the manufacture of which of the following are they used?
(a) Cosmetics
(b) Electronics
(c) Wooden furniture
(d) Synthetic textiles

**108.** Consider the following statements:
1. In certain parts of India, the cultivation of opium is legally allowed.
2. Opium gum is mixed with cluster bean gum in fracking technology that is used in the shale gas extraction.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**109.** There is a worldwide protest against the use of hydrofluorocarbons. In which of the following household things are they used?
(a) Air-conditioning machines
(b) Cooking gas cylinders
(c) Gas geysers
(d) Microwave ovens

**110.** What is/are the objectives of Cartagena Protocol on Biosafety?
1. Establishing or promoting in-situ conservation facilities for rare and endangered organisms
2. Maintaining the worldwide network of gene banks for all the known flora and fauna

Select the correct answer using the code given below:
(a) 1 only

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**55.** Killer T cells which are responsible for defence against intracellular pathogen are expressed by which of the following CD phenotypes?
(a) CD 2
(b) CD 5
(c) CD 8
(d) CD 10

**56.** Intravenous immunoglobulin therapy is approved in the following conditions EXCEPT:
(a) Kawasaki disease
(b) Severe rheumatoid arthritis
(c) Guillain Barre syndrome
(d) Dermatomyositis

**57.** Which of the following does NOT cause small vessel vasculitis?
(a) Churg Strauss Syndrome
(b) Henoch-Schonlein purpura
(c) Kawasaki disease
(d) Granulomatosis with polyangiitis

**58.** Most common cells in peripheral blood smear of chronic myeloid leukemia are:
(a) Myeloblasts
(b) Promyelocytes
(c) Metamyelocytes
(d) Neutrophils

**59.** Consider the following statements about infective endocarditis:
1. Modified Duke criteria are used for clinical diagnosis
2. Echocardiographic findings form one of the major Duke criteria
3. Presence of one major and two minor criteria is considered as diagnostic of endocarditis
4. Presence of glomerulonephritis is a minor Duke criterion

Which of the statements given above are correct?
(a) 1, 2 and 3 only
(b) 1, 2 and 4 only
(c) 3 and 4 only
(d) 1, 2, 3 and 4

**60.** A 16 year old had an acute episode of dyspnoea, wheezing and coughing during early morning hours. The episode resolved spontaneously. What is the likely diagnosis?
(a) Pulmonary oedema
(b) Asthma
(c) Panic attack
(d) Pneumonia

**61.** An elderly patient had cerebrovascular accident which was diagnosed as ischaemic in nature. Which of the following is a contraindication for thrombolysis?
1. Onset of symptoms to time of drug administration is $\leq$ 4.5 hours
2. Gastrointestinal bleeding in preceding 21 days

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**62.** Consider the following insulin preparations:
1. Aspart
2. Glulisine
3. Detemir
4. Regular

Which of the above are considered short acting insulin?
(a) 1 and 2 only
(b) 3 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

**63.** A middle aged male known smoker presented with recurrent sinusitis, haemoptysis, haematuria, arthralgia and palpable purpura. What is the most likely diagnosis?
(a) Wegener granulomatosis
(b) Goodpasture syndrome
(c) Polyarteritis nodosa
(d) Systemic lupus erythematosus

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**81.** A seven year old boy presents with acute onset of mild intermittent pain in the right groin and a limp. Abduction and internal rotation of the hip were restricted on the affected side. There was no fever. Radiographs of the pelvis were normal. The most likely diagnosis is:
(a) Transient monoarticular synovitis
(b) Legg Calve Perthes disease
(c) Slipped capital femoral epiphyses
(d) Osteochondritis dissecans

**82.** A child is brought with history of ingestion of an unknown substance. On examination child has excess salivation, lacrimation, miosis, gastrointestinal cramps and emesis. What was the most likely substance ingested?
(a) Carbamates
(b) Phenothiazines
(c) Opioids
(d) Tricyclic antidepressants

**83.** A term newborn presents with respiratory failure which is refractory to mechanical ventilation, surfactant replacement therapy, glucocorticoid administration and extra corporeal membrane oxygenation. The most likely diagnosis is:
(a) Surfactant Protein B deficiency
(b) Primary ciliary dyskinesia
(c) Persistent tachypnea of infancy
(d) Lymphocytic interstitial pneumonitis

**84.** A child after snake bite develops petechiae and ecchymosis on the skin. In addition, child develops bleeding from venipuncture site and oliguria. The most likely snake species is:
(a) Pit viper
(b) Cobra
(c) Mamba
(d) Python

**85.** A six year old boy presents with short neck, low hairline and restriction of neck movements. The child also has Sprengel anomaly, scoliosis, and fused cervical vertebrae. The most likely diagnosis is:
(a) Atlantoaxial instability
(b) Klippel Feil syndrome
(c) Noonan syndrome
(d) Sandifer syndrome

**86.** A 10 year old boy presents with recurrent bouts of nasal congestion, itching, sneezing, clear rhinorrhoea and conjunctival irritation. On examination he has conjunctival hyperaemia, allergic gape and a transverse nasal crease. Which of the following drugs is preferred for management of this child?
(a) Diphenhydramine
(b) Fluticasone
(c) Cetirizine
(d) Ipratropium bromide

**87.** A two year old child presents with partial albinism and susceptibility to infection. Peripheral smear examination reveals giant peroxidase positive lysosomal granules in granulocytes. Which of the following is most likely diagnosis?
(a) Angelman Syndrome
(b) Hermansky Pudlak Syndrome
(c) Waardenburg Syndrome
(d) Chediak Higashi syndrome

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**88.** A one year old child on exclusive milk feeds presents with constipation. On examination there is no fecal impaction. What is the next step in management?
(a) Oral lactulose
(b) Increasing intake of vegetables and cereals
(c) Colonic enemas using polyethylene glycol
(d) Milk of Magnesia

**89.** A six year old boy presents with generalized seizure disorder and hypopigmented skin lesions. On examination he has tiny red nodules over the nose and cheeks. The most likely diagnosis is:
(a) Tuberous sclerosis
(b) Sturge Weber disease
(c) PHACE Syndrome
(d) Neurofibromatosis

**90.** Which of the following can cause bilateral sensorineural hearing loss?
(a) Histiocytosis
(b) Cholesteatoma

(b) Tissue transglutaminase antibodies
(c) Lower GI contrast examination
(d) Colonoscopy/sigmoidoscopy

**73.** A seven year old boy weighing 20 kg presented with bleeding from upper GI tract (haematemesis) for last 18 hours. On examination, PR=86/min, RR=16/min and BP=100/70 mmHg; and spleen is palpable 5 cm below costal margin. There is no other abnormality. Liver function tests are normal. What is the next best step in management?
(a) Fluid resuscitation with crystalloids
(b) Intravenous vasopressin
(c) Intravenous propranolol
(d) Transdermal nitroglycerine

**74.** A seven year old girl presents in emergency room with hypertension, lethargy, headache, seizures, and visual disturbances. Fundus examination reveals haemorrhages and exudates. Which of the following treatment regimen will be the most appropriate for this child?
(a) Sublingual nifedipine
(b) Intravenous labetalol infusion
(c) Intravenous minoxidil
(d) Furosemide

**75.** On routine newborn screening at day 3 of life, the baby was found to have TSH level 40 mU/L. What should be the next step?
(a) Repeat thyroid profile within one week
(b) Start child on thyroxine immediately
(c) Repeat thyroid profile after four weeks
(d) Repeat thyroid profile / start thyroxine, if the child has clinical features of congenital hypothyroidism, otherwise wait and watch

**76.** A five year old girl is brought to you with history of fever for seven days associated with rash, anorexia, myalgia and petechial haemorrhages. Which of the following investigations will be most appropriate for making a diagnosis of dengue fever?
(a) Detection of NS1 antigen
(b) Platelet count
(c) IgG capture ELISA
(d) Detection of IgM antibodies for dengue

**77.** An eight year old boy was diagnosed to have P.vivax malaria and was treated with appropriate dosages of chloroquine. The fever subsided but recurred after 3 weeks. Peripheral smear was again positive for P.vivax. This child should now be treated as a case with
(a) Relapse
(b) Recrudescence
(c) Either relapse/recrudescence
(d) Fresh infection

**78.** A two day old neonate is brought with cyanosis, single second heart sound, and pansystolic murmur on the left sternal border. ECG reveals left axis deviation, right atrial overload and left ventricular hypertrophy. What is the most likely diagnosis?
(a) Tetrology of Fallot
(b) Tricuspid atresia
(c) Transposition of great arteries
(d) Total anomalous pulmonary venous connection

**79.** A three year old girl is brought with complaint of not being able to ever stand or walk. She achieved head control at one year of age. Examination reveals generalised hypotonia, brisk knee jerk, and ankle clonus. What is the likely diagnosis?
(a) Cerebral palsy
(b) Spinal muscular atrophy
(c) Congenital hypothyroidism
(d) Congenital myotonic dystrophy

**80.** A child presents with sensations of itching, burning and a probable foreign body beneath the eyelids. Examination reveals photophobia, large oval follicles within the conjunctiva and preauricular adenopathy. The most likely diagnosis is:
(a) Epidemic keratoconjunctivitis
(b) Vernal conjunctivitis
(c) Trachomatous conjunctivitis
(d) Phlyctenular conjunctivitis

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**64.** A patient presents with diarrhoea, steatorrhea and weight loss. Which of the following diseases is LEAST possible?
(a) Whipple disease
(b) Tropical sprue
(c) Celiac disease
(d) Menetrier disease

**65.** Consider the following statements regarding post-streptococcal glomerulonephritis (PSGN):
1. Immunosuppressive therapy is effective
2. PSGN develops one to three weeks after streptococcal pharyngitis
3. PSGN develops two to six weeks after impetigo
4. The classic presentation is acute nephritis

Which of the statements given above are correct?
(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1 and 4 only
(d) 1, 2, 3 and 4

**66.** A patient with long term implantable cardioverter defibrillator device developed neck and facial swelling, hoarseness of voice, nasal congestion, dysphagia and haemoptysis. The facial swelling increased on supine position. This patient most likely developed:
(a) Cardiac tamponade
(b) Intracardiac thrombosis
(c) Superior vena cava obstruction
(d) Pulmonary thromboembolism

**67.** A patient of AIDS developed ophthalmoplegia, ataxia and global confusion. He is likely to have the deficiency of:
(a) Biotin
(b) Niacin
(c) Pyridoxine
(d) Thiamine

**68.** An elderly male presents with persistent productive cough with large volume purulent sputum production. He has had several episodes in the past. He also had digital clubbing. He is a case of:
(a) Empyema
(b) Bronchiectasis
(c) Bronchopneumonia
(d) Necrotising pneumonia

**69.** A chemical factory worker has acute onset dyspnoea with fever, chills, and malaise, following a few hours of exposure to a new chemical. These symptoms resolve in four to five days after removal from exposure. He is likely to have:
(a) Hypersensitivity pneumonitis
(b) Atypical pneumonia
(c) Cryptogenic organising pneumonia
(d) Non-specific interstitial pneumonia

**70.** A 25 year old man presents with nausea, vomiting and diarrhoea with crampy abdominal pain. He gives history of consumption of rice preparation in his last meal. What is the likely organism causing the above complaints?
(a) Clostridium perfringens
(b) Bacillus cereus
(c) Staphylococcus aureus
(d) Campylobacter jejuni

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**71.** A five year old child was diagnosed with nephrotic syndrome, 18 months back. He was treated and successfully went into remission at that time. Following the initial episode, the child has had 3 relapses, each of which was successfully treated with oral prednisolone (60 mg/m$^2$/day) until remission, followed by 40 mg/m$^2$ single dose, alternate days for four weeks. What is the diagnosis?
(a) Nephrotic syndrome, infrequent relapses
(b) Nephrotic syndrome, frequent relapses
(c) Nephrotic syndrome, steroid dependent
(d) Nephrotic syndrome, steroid resistant

**72.** A 7 year old girl presents to you with non-specific abdominal pain, mild abdominal distension, and not growing well. The child weighs 14 kg and height is 95 cm. Systemic examination is normal. The haemoglobin was 7.5 g/dL (microcytic hypochromic RBCs) and has not responded to iron therapy. Which of the following will be the first investigation you will like to do for diagnosing the condition?
(a) Bone marrow aspiration

(c) Loop diuretics
(d) Glomus tumors

**91.** The joint sitting of Parliament for transacting a legislative business is presided over by:
(a) The President of India
(b) The Vice President of India
(c) The Prime Minister of India
(d) The Speaker of Lok Sabha

**92.** Recently, a massive coral bleaching has been reported in the 'Great Barrier Reef'. It is located near the coast of:
(a) Queensland
(b) Maldives
(c) Hawaii
(d) Andaman

**93.** Who is the first Law Officer of the Government of India?
(a) Chief Justice of India
(b) Attorney General of India
(c) Law Secretary
(d) Union Law Minister

**94.** In the context of Genetic Engineering, scientists have developed a new computational method called 'Target Finder' which can predict where non-coding DNA interacts with genes. Which of the following is a likely advantage of this?
(a) Artificial induction of beneficial mutations so as to develop high-yielding varieties
(b) Finding new drug targets to treat some genetic diseases
(c) Rapid cloning of domesticated animals
(d) All of these

**95.** Consider the following:
1. Gold
2. Platinum
3. Silver

Which of the above is/are found in e-waste?
(a) 1 and 2 only
(b) 3 only
(c) 1, 2 and 3
(d) None

**96.** 'Boil a small quantity of khoya with some water, cool and add a few drops of iodine solution and see the formation of blue colour'. This is the test to find the presence of which of the following?
(a) Fructose
(b) Gram flour
(c) Starch
(d) Urea

**97.** Which of the following CANNOT be used as a biofertilizer in rice cultivation?
(a) Azolla
(b) Azospirillum
(c) Blue green algae
(d) Rhizobium

**98.** Groundwater in many areas in West Bengal has been contaminated leading to a large number of cases of poisoning. What is the substance responsible for such cases?
(a) Arsenic
(b) Cyanide
(c) Polonium
(d) Lead

**99.** For acquiring ethanol for blending with petrol, the oil companies in India depend on:
(a) Cosmetic industry
(b) Food processing plants
(c) Fertilizer factories
(d) Sugar mills

**100.** Consider the following statements:
Targeted Delivery of Financial and Other Subsidies, Benefits and Services Act, 2016 aims to
1. strengthen the Pradhan Mantri Jan Dhan Yojana
2. provide funds for the relief of farmers

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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(d) None of them is used in food preservation

**120.** What is 'M-cessation', sometimes seen in news?

(a) An initiative to help tobacco users to quit tobacco

(b) A mobile phone service that delivers audio messages on pregnancy, child birth and child care

(c) An app to learn all the methods of cashless financial transactions

(d) A government initiative to eradicate the availability of narcotics to general public

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(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**111.** Consider the following animals:
1. Sloth bear
2. Jaguar
3. Hoolock gibbon

Which of the above is/are found in India in their natural habitat?
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**112.** Consider the following statements:
1. Biodiversity is normally greater in the lower latitude as compared to higher latitudes.
2. Along the mountain gradient, biodiversity is normally greater in the lower altitudes as compared to higher altitudes.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**113.** Aflatoxins are formed by:
(a) Aspergillus flavus
(b) Candida albicans
(c) Cryptococcus neoformans
(d) Coccidioides schneckii

**114.** Consider the following districts:
1. Munnar
2. Mandi
3. Krishna

Which of the above districts is/are well known for tea plantations?
(a) 3 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1 only

**115.** 'Fly ash' is emitted from:
(a) Brick kilns
(b) Motor vehicles
(c) Sewage treatment plants
(d) Thermal power plants

**116.** Calcium carbide is used
(a) as rodent killer
(b) as insecticide
(c) for fruit ripening
(d) for lowering soil salinity

**117.** With reference to food additives, consider the following statements:
1. Benzoic acid and sorbic acid function as antimicrobial agents.
2. Citric acid is used to suppress browning of fruits and vegetables.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**118.** With reference to the use of microorganisms in food processing, consider the following statements:
1. Lactic acid bacteria can ferment any monosaccharide or polysaccharide into lactic acid.
2. Baker's yeast is manufactured from single cell isolates of Saccharomyces cerevisiae.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**119.** Which of the following chemicals is/are used in food preservation?
1. Calcium propionate
2. Potassium metabisulphite
3. Lecithin

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 3 only
(c) 1, 2 and 3

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(c) IV amphotericin
(d) Griseofulvin

**43.** Which of the following statements is NOT true regarding neuroleptic malignant syndrome?
(a) Caused by haloperidol
(b) Characterized by muscle rigidity and hyperthermia
(c) There is stimulation of central dopamine receptors in hypothalamus
(d) Treated by IV dantrolene

**44.** Type IV renal tubular acidosis may be caused by all of the following EXCEPT:
(a) Low molecular weight heparin
(b) NSAIDS
(c) Penicillin
(d) Trimethoprim

**45.** Treatment options available for management of renal artery stenosis is/are:
(a) Medical treatment for hypertension by antihypertensive drugs
(b) Angioplasty, with or without stenting
(c) Renal artery bypass surgery
(d) All of these

**46.** A reversible cause of dementia is:
(a) Alzheimer disease
(b) Huntington chorea
(c) Parkinson disease
(d) Subdural haematoma

**47.** In Wallenberg syndrome, where is the site of lesion?
(a) Lateral medulla
(b) Medial medulla
(c) Pontomedullary junction
(d) Dorsal midbrain

**48.** The following are features of polycythaemia vera EXCEPT:
(a) Elevated red cell mass
(b) Normal arterial oxygen saturation
(c) Splenomegaly
(d) Elevated plasma erythropoietin levels

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**49.** Which of the following conditions is associated with cigarette smoking?
(a) Non-specific interstitial pneumonia
(b) Acute interstitial pneumonia
(c) Cryptogenic organizing pneumonia
(d) Desquamative interstitial pneumonia

**50.** Which of the following is NOT true of Wilson disease?
(a) There is hepatolenticular degeneration
(b) Autosomal recessive transmission
(c) Serum ceruloplasmin is increased
(d) Urinary copper is increased

**51.** A 55 year old patient on treatment for pulmonary tuberculosis with Rifampicin, Isoniazid, Pyrazinamide and Ethambutol complain of pain in large and small joints. Which one of the following investigations will you order?
(a) Serum creatinine
(b) Serum amylase
(c) SGOT/SGPT
(d) Serum uric acid

**52.** The following diseases can cause bullous lesions in the skin EXCEPT:
(a) Pemphigus
(b) Impetigo
(c) Toxic epidermal necrolysis
(d) Pityriasis rosea

**53.** Which of the following disorder is autosomal recessive?
(a) Cystic fibrosis
(b) Nail-patella syndrome
(c) Myotonic dystrophy
(d) Huntington disease

**54.** Which one of the following is the most appropriate treatment for overdose aspirin ingestion?
(a) Acetazolamide
(b) Sodium bicarbonate
(c) Allopurinol
(d) N-acetyl-cysteine

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# PAPER 2017 ANSWERS

1. (a) Hepatitis A does not lead to massive hepatic necrosis

While Hepatitis A infection is most often self-limiting and rarely progresses to fulminant hepatitis, it _can_ lead to severe hepatic necrosis in a small percentage of cases. Thus, saying it "does not lead" to massive hepatic necrosis is inaccurate because fulminant hepatitis A—albeit uncommon—has been documented. On the other hand, Hepatitis B vaccination is indeed part of universal immunization schedules in many regions, Hepatitis C historically was the chief culprit in transfusion-related hepatitis, and Hepatitis E carries especially high mortality in pregnant women.

2. (d) Ramipril

Ramipril is an angiotensin-converting enzyme (ACE) inhibitor and belongs to a class of drugs known to be teratogenic in pregnancy. ACE inhibitors can cause fetal renal damage, oligohydramnios, and other congenital defects. In contrast, drugs such as hydralazine and labetalol are commonly used in managing hypertension during pregnancy, and while amlodipine's safety profile requires caution, it is not outright contraindicated. Thus, among the listed options, Ramipril is the clear choice to avoid during pregnancy.

3. (b) Atrial septal defect

An atrial septal defect (ASD) is typically associated with less turbulent flow compared to other congenital cardiac lesions. Turbulent flow or high-velocity jets predispose to endothelial damage, which encourages thrombus formation and bacterial seeding key factors for infective endocarditis. Lesions like ventricular septal defect, patent ductus arteriosus, or Tetralogy of Fallot create more abnormal flow dynamics that are conducive to endocardial injury and subsequent infection. Hence, ASD carries the least risk for infective endocarditis among these choices.

4. (b) Dissection of aorta

Marfan's syndrome features connective tissue abnormalities that weaken the aortic wall and predispose to aortic dissection. The clinical presentation of a sudden, severe "tearing" or "ripping" chest and interscapular pain, very high blood pressure, and a widened mediastinum on chest X-ray strongly suggests acute aortic dissection. Sinus tachycardia may be a response to pain and stress. Pulmonary embolism more typically presents with pleuritic chest pain and dyspnea, while myocardial infarction and pericarditis have different hallmark clinical and ECG findings.

5. (b) Erythromycin

Patients with a penicillin allergy require an alternative antibiotic for the long-term prophylaxis of rheumatic fever. Macrolides, such as erythromycin, are recommended in place of penicillin to prevent recurrent Group A Streptococcal infections in susceptible individuals. Ciprofloxacin, a fluoroquinolone, is not typically used for rheumatic fever prophylaxis. Cotrimoxazole and tetracycline do not serve as standard prophylactic agents for this purpose either. Thus, erythromycin stands out as the suitable substitute in penicillin-allergic patients.

6. (a) Hypocalcaemia

A prolonged QT interval is classically associated with low serum calcium levels. In hypocalcemia, the duration of the ventricular action potential is prolonged, leading to lengthening of the QT segment on ECG. Hyperkalaemia and hypermagnesaemia typically produce different ECG changes (peaked T waves, shortened QT in hypercalcemia, etc.). Digoxin therapy usually causes a characteristic scooped ST segment ("Salvador Dali mustache" pattern) but is not primarily known for prolonging the QT interval.

7. (c) Patent ductus arteriosus with pulmonary arterial hypertension

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Differential cyanosis refers to a scenario where the lower limbs (supplied distal to the ductus arteriosus) become more cyanotic than the upper body. In a PDA with significant pulmonary hypertension (Eisenmenger syndrome), the shunt reverses from right-to-left, causing deoxygenated blood to enter the aorta distal to the subclavian artery. Hence, the lower body receives blood that is less oxygenated, producing detectable cyanosis there. ASDs, VSDs, or Fallot tetralogy have different pathophysiological mechanisms that do not produce this pattern of differential cyanosis.

8. (d) Increased serum ceruloplasmin

Wilson's disease involves a defect in copper metabolism that leads to excessive copper deposition in tissues, including the liver, brain, and cornea (Kayser-Fleischer rings visible in Descemet's membrane). Elevated urinary copper excretion and hepatic copper content are also hallmarks. However, a _decrease_ in serum ceruloplasmin is typical because ceruloplasmin is the copper-carrying protein in the blood. Low ceruloplasmin and high free copper often help confirm the diagnosis. Thus, "increased serum ceruloplasmin" is the incorrect statement.

9. (d) Cephalexin

Standard regimens for Helicobacter pylori eradication usually combine a proton pump inhibitor (PPI) with two antibiotics such as amoxicillin, clarithromycin, or metronidazole, and may include bismuth in quadruple therapy. Tetracycline and bismuth subsalicylate are also used in specific regimens (e.g., bismuth-based quadruple therapy). Cephalexin is typically not a recognized component of first-line or alternative H. pylori treatment regimens due to limited efficacy against this organism when compared with other recommended antibiotics.

10. (a) Plummer Vinson syndrome

Plummer Vinson syndrome (also called Paterson-Brown-Kelly syndrome) is characterized by the triad of iron-deficiency anemia, dysphagia, and esophageal webs. Koilonychia ("spoon-shaped" nails) is commonly observed in iron deficiency and supports this diagnosis. Boerhaave syndrome involves esophageal rupture, typically due to forceful vomiting. Carcinoma esophagus may cause progressive dysphagia but is not specifically associated with koilonychia. Reflux oesophagitis often presents with heartburn and acid reflux symptoms rather than the distinct combination seen in Plummer Vinson syndrome.

11. (c) Pleural effusion is less than 10 mm thickness on decubitus

Indications for chest tube insertion in parapneumonic effusions or empyema include the presence of frank pus, positive pleural fluid cultures, very low pleural fluid pH (often <7.2), and loculations preventing proper drainage. A thin effusion (<10 mm on decubitus film) is typically too small to drain via tube thoracostomy and often can be managed conservatively with antibiotics. Thus, effusions smaller than 10 mm do not meet common criteria for chest tube placement, making this the correct "EXCEPT" statement.

12. (a) Pulmonary embolism

A classic triad of dyspnea, pleuritic chest pain, and hemoptysis shortly after surgery strongly suggests pulmonary embolism (PE). Orthopedic surgeries such as hip replacement carry significant risk of venous thromboembolism if prophylaxis is inadequate or other risk factors are present. Pneumonia would more commonly present with fever, productive cough, and focal consolidation on examination. Pulmonary edema typically lacks the sharp pleuritic pain and hemoptysis is less common. Pericarditis produces chest pain often relieved by leaning forward and not typically associated with hemoptysis.

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13. (c) Respiratory acidosis, partially compensated

The arterial blood gas (ABG) shows a low pH (7.3), indicating acidemia. The $PaCO_2$ is elevated (68 mmHg), consistent with a respiratory acidosis. The bicarbonate ($HCO_3$) is also elevated at 28 mmol/L, reflecting some metabolic compensation, but not enough to normalize the pH. This partial compensation is typical of an acute on chronic exacerbation of COPD, where chronic $CO_2$ retention has led to

suspension is suitable mainly for oropharyngeal thrush, but often inadequate for deeper esophageal involvement. IV amphotericin may be reserved for severe or azole-resistant cases. Griseofulvin is used chiefly for dermatophyte infections (skin, hair, nails) and is not typically indicated for Candida esophagitis.

**43.** (c) There is stimulation of central dopamine receptors in hypothalamus

Neuroleptic malignant syndrome (NMS) is a potentially life-threatening reaction to dopamine antagonists (e.g., haloperidol). It typically involves _blockade_ of dopamine pathways, not stimulation. This leads to muscle rigidity, hyperthermia, altered mental status, and autonomic instability. Management often includes stopping the offending agent, supportive care, dopamine agonists (e.g., bromocriptine), and use of dantrolene to mitigate hyperthermia and rigidity. Hence, statement (c), mentioning "stimulation" rather than "blockade," is _not_ true.

**44.** (c) Penicillin

Type IV RTA involves hypoaldosteronism or aldosterone resistance, leading to hyperkalemia and mild metabolic acidosis. Certain drugs contribute to decreased aldosterone production or activity: low molecular weight heparin reduces aldosterone synthesis, NSAIDs diminish renin release, and trimethoprim blocks sodium channels in the distal nephron (mimicking aldosterone resistance). Penicillin does not commonly induce Type IV RTA, making it the correct "EXCEPT."

**45.** (d) All of these

Renal artery stenosis (especially when caused by atherosclerosis or fibromuscular dysplasia) can be managed in multiple ways. Medical therapy includes antihypertensives (e.g., ACE inhibitors, although caution if bilateral involvement). Percutaneous transluminal renal angioplasty (with or without stenting) is an interventional approach. Surgical revascularization (e.g., bypass) may be indicated in certain refractory or complex cases. Thus, all of the above can play a role in management, depending on the scenario.

**46.** (d) Subdural haematoma

Chronic subdural hematomas, especially in older adults or those on anticoagulation, may present with gradually worsening confusion, cognitive decline, and other neurological deficits. Because the fluid collection exerts pressure on the brain, it can mimic dementia. However, prompt diagnosis and surgical drainage can reverse many of these symptoms, making it a rare but significant reversible cause. Alzheimer's, Huntington's, and Parkinson's disease–related dementia are progressive and not generally reversible.

**47.** (a) Lateral medulla

Wallenberg syndrome (lateral medullary syndrome) typically arises from occlusion of the posterior inferior cerebellar artery (PICA) or vertebral artery. The infarction affects the lateral part of the medulla oblongata. Clinical features include ipsilateral loss of pain and temperature sensation on the face, dysphagia, hoarseness, vertigo, ataxia, and contralateral loss of pain and temperature on the body. Medial medulla, pontomedullary junction, and dorsal midbrain infarctions have distinct syndromes with different neurological deficits.

**48.** (d) Elevated plasma erythropoietin levels

Polycythemia vera (PV) is a myeloproliferative disorder in which the RBC mass is pathologically increased. Arterial oxygen saturation remains normal (unlike secondary polycythemia due to hypoxia). Splenomegaly is common due to extramedullary hematopoiesis. However, because the overproduction of RBCs is _primary_ (driven by JAK2 mutations), erythropoietin (EPO) is typically _low or suppressed_, not elevated. Thus, high plasma EPO is seen more in secondary polycythemia, making (d) the "EXCEPT."

**49.** (d) Desquamative interstitial pneumonia

Desquamative interstitial pneumonia (DIP) is one of the idiopathic interstitial pneumonias strongly linked to cigarette smoking. It is characterized by the accumulation of macrophages within alveolar spaces, often responding favorably to smoking cessation and/

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hyperkalaemia), and disturbances in sodium balance (often hyponatremia). Metabolic _ acidosis_, not alkalosis, is typical in acute renal failure because decreased renal function impairs acid excretion and bicarbonate reabsorption. Hence, metabolic alkalosis is not a usual complication, making it the correct "EXCEPT" choice among the listed options.

**21.** (d) Vitamin B12

Subacute combined degeneration of the spinal cord is strongly linked to Vitamin B12 (cobalamin) deficiency. This condition involves demyelination in the dorsal columns (affecting proprioception and vibration sense) and the lateral corticospinal tracts (causing spasticity). Over time, it can produce a mix of sensory and motor deficits if not recognized and treated. While other B vitamins have roles in neurological function, only B12 deficiency classically causes subacute combined degeneration. Early detection and supplementation are crucial to prevent permanent damage.

**22.** (d) Asthma

In obstructive pulmonary diseases, airway narrowing leads to increased resistance to airflow, especially during expiration. Asthma is a prime example, characterized by reversible bronchoconstriction and airway hyperresponsiveness, resulting in classic obstructive changes on spirometry (reduced FEV1/FVC ratio). Obesity, kyphoscoliosis, and pleural effusion typically produce a restrictive pattern, with diminished lung volumes but relatively preserved airflow ratios. Therefore, among the listed choices, only asthma fits the hallmark of an obstructive ventilatory defect.

**23.** (c) Alveolar haemorrhage

Diffusing capacity (DLCO) can rise when there is extra hemoglobin within the alveolar space that can bind the test gas (commonly carbon monoxide). Alveolar hemorrhage introduces blood into the alveoli, increasing the potential binding sites for CO and thus artificially elevating DLCO. Emphysema, idiopathic pulmonary fibrosis, and pulmonary edema usually impair normal diffusion by destroying alveolar walls or increasing diffusion distance—thereby reducing or normalizing DLCO rather than increasing it.

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**24.** (b) Omalizumab is a blocking antibody that neutralises circulating IgE

Omalizumab is a monoclonal antibody used in moderate-to-severe persistent allergic asthma. It binds to the Fc region of free IgE, preventing IgE from attaching to mast cells and basophils, thereby reducing the allergic cascade. It is not an antileukotriene (like montelukast), nor is it a long-acting anticholinergic (such as tiotropium) or a beta-2 agonist (like salmeterol). Omalizumab is administered subcutaneously at intervals (often every 2-4 weeks), depending on serum IgE levels and clinical response.

**25.** (b) Pericarditis

Acute pericarditis often demonstrates diffuse, concave ST elevation and PR depression across multiple leads on an ECG, sparing aVR (which may show reciprocal changes). This pattern differs from ST elevations in myocardial infarction, which are typically localized to specific coronary territories. Digoxin toxicity can cause scooped ST segments and arrhythmias, while HOCM creates other characteristic ECG findings (e.g., left ventricular hypertrophy, deep septal Q waves). Thus, diffuse ST elevation and PR depression is most consistent with pericarditis.

**26.** (b) Type 2 lepra reaction

In lepromatous leprosy, immune complex-mediated inflammation known as Type 2 lepra reaction (erythema nodosum leprosum, ENL) can occur, particularly after starting multi-drug therapy. It presents with tender erythematous nodules on the skin, systemic symptoms like fever, malaise, and often lymphadenopathy. Type 1 lepra reaction (reversal reaction) is more common in borderline leprosy, involving a cell-mediated immunological shift. Lucio's phenomenon is a rare severe necrotizing cutaneous reaction seen in diffuse lepromatous leprosy. Lupus pernio is associated with sarcoidosis, not leprosy.

**27.** (d) Loop diuretics are usually well tolerated

vasculitis), and granulomatosis with polyangiitis (Wegener's) primarily affect small vessels (arterioles, capillaries, venules). Thus, (c) is the condition that does _not_ fall under the small vessel vasculitis category.

**58.** (d) Neutrophils

Chronic myeloid leukemia (CML) is characterized by a marked increase in granulocytes at all stages of maturation. While "myelocytes" are classically said to be the most common _immature_ form, in terms of total cell count, mature neutrophils typically predominate in the peripheral smear. Promyelocytes and myeloblasts remain a smaller fraction during the chronic phase (blasts usually <10%). Hence, among the given options, neutrophils are the most frequently observed cell type in a typical CML smear.

**59.** (b) 1, 2 and 4 only

The Modified Duke criteria are the standard for diagnosing infective endocarditis (IE). Major criteria include typical positive blood cultures or echocardiographic evidence of endocardial involvement. Minor criteria include fever, predisposing heart condition or IV drug use, vascular phenomena, immunologic phenomena (such as glomerulonephritis), and certain microbiologic or echocardiographic findings not meeting major criteria. "Definite IE" commonly requires _two major_, or _one major plus three minor_, or _five minor_. Thus, statement (3)—"one major and two minor" as _diagnostic_—is incorrect.

**60.** (b) Asthma

Asthma often presents with episodic wheezing, coughing, and shortness of breath, frequently worse at night or in the early morning (nocturnal asthma). Symptoms often resolve spontaneously or with bronchodilators. Pulmonary edema would typically show additional signs such as frothy sputum and findings of fluid overload. Panic attacks can cause hyperventilation but do not typically produce wheezing. Pneumonia usually has more persistent symptoms with fever and focal chest signs.

**61.** (b) 2 only

A key eligibility criterion for thrombolysis in acute ischemic stroke is that the onset of symptoms must be _within_ 4.5 hours; this is not a contraindication—indeed, it is the standard window. Recent major bleeding events, however, are generally contraindications because of the high risk of hemorrhage with thrombolytic therapy. Gastrointestinal bleeding within 21 days is a relative or absolute contraindication, depending on severity. Thus, statement (2) is a contraindication, while (1) is not.

**62.** (c) 1, 2 and 4 only

Insulin aspart and insulin glulisine are rapid-acting analogs, typically beginning action within minutes. Regular (crystalline) insulin is classically termed "short-acting," with onset around 30 minutes. By contrast, insulin detemir is a _long-acting_ insulin analog used mainly for basal coverage. Therefore, aspart, glulisine, and regular insulin all fall under "short" or "rapid" coverage, whereas detemir does not.

**63.** (a) Wegener granulomatosis (Granulomatosis with polyangiitis)

Granulomatosis with polyangiitis (formerly Wegener's) is a small vessel vasculitis that often presents with involvement of the upper airways (chronic sinusitis), lungs (hemoptysis), and kidneys (hematuria), along with systemic features like arthralgias and purpura. Goodpasture's involves lungs and kidneys but typically lacks significant sinus or upper respiratory granulomatous involvement. Polyarteritis nodosa usually spares the lungs, and SLE has a broader systemic spectrum, often with different immunologic markers.

**64.** (d) Menetrier disease

Whipple disease, tropical sprue, and celiac disease are all malabsorptive disorders that commonly lead to diarrhea, steatorrhea, and weight loss. By contrast, Ménétrier disease is characterized primarily by hypertrophic gastric mucosal folds, protein-losing gastropathy, and hypoproteinemia. It is not typically associated with pronounced steatorrhea or classic malabsorption. Therefore, among the

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right bundle branch block. The acute strain on the right ventricle can reduce cardiac output and precipitate right heart failure. _Typical_ chest radiographic findings in an acute PE may be subtle or even normal; large consolidation-type "opacities" are not a hallmark. Therefore, among the listed options, (b) is the best "EXCEPT."

**35.** (d) Hyperuricaemia

Isoniazid can cause hepatotoxicity (hepatitis) and commonly leads to peripheral neuropathy by interfering with pyridoxine (vitamin $B_6$) metabolism. Skin rash is also recognized. Hyperuricemia, however, is more typically associated with pyrazinamide (another anti-TB agent), not isoniazid. Consequently, (d) is the incorrect side effect in the context of isoniazid therapy.

**36.** (b) 2 and 3

A large spontaneous pneumothorax in a COPD patient (i.e., secondary spontaneous pneumothorax) generally warrants immediate chest tube placement (tube thoracostomy) to re-expand the lung and relieve symptoms. Pleurodesis (chemical or mechanical) may be considered for recurrent pneumothoraces or if the air leak is persistent. Simple aspiration is more often limited to _primary_ spontaneous pneumothoraces that are not large or tension-related. Hence, for a large pneumothorax in COPD, steps 2 and 3 are appropriate.

**37.** (c) 35-45 mm of Hg

Normal arterial $PaCO_2$ under standard conditions at sea level ranges between 35 and 45 mmHg. Levels below this suggest hyperventilation leading to respiratory alkalosis, whereas elevations above 45 mmHg indicate hypoventilation and potential respiratory acidosis.

**38.** (c) Alveolar ventilation

Alveolar ventilation (VA) refers to the volume of air that actually reaches the gas-exchanging alveoli per minute. It excludes the air remaining in the conducting airways (anatomical dead space). Diffusing capacity measures how well gases diffuse across alveolar membranes, while dead space is the volume of non-gas-exchanging airways. "Ventilation-perfusion" (V/Q) describes the matching of air flow and blood flow in the lungs but is not a direct measure of the volume of fresh air entering alveoli per minute.

**39.** (a) Brittle asthma

"Brittle asthma" describes a pattern of asthma characterized by wide peak flow variability or severe, sudden attacks that can occur with minimal warning. Type 1 brittle asthma involves persistent variability in peak flow despite intense treatment, while Type 2 describes abrupt, unpredictable attacks. "Acute severe asthma" is a general term for a dangerous flare, "poorly controlled asthma" refers to inadequate control over time, and "nocturnal asthma" is a pattern of worsened symptoms overnight.

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**40.** (b) Aluminium hydroxide

Aluminum hydroxide is well-known to cause constipation by reducing intestinal motility. Magnesium-based antacids, on the other hand, tend to have a laxative effect. Calcium carbonate can cause constipation in some individuals but is less noted for this than aluminum. Sodium bicarbonate can lead to metabolic alkalosis or sodium overload but is not typically associated with constipation.

**41.** (c) Transjugular intrahepatic portosystemic shunt

A TIPS is a radiologically guided procedure in which an interventional radiologist creates a channel within the liver parenchyma connecting a branch of the portal vein to a hepatic vein. This helps decompress portal hypertension by allowing blood to bypass the cirrhotic liver sinusoids, reducing complications like variceal bleeding. "Transjugular intrahepatic portosystemic shunt" accurately describes both the vascular access route (via the jugular vein) and the portal-systemic connection created.

**42.** (a) Fluconazole

For esophageal candidiasis, an azole antifungal such as fluconazole is the standard first-line therapy because it achieves adequate mucosal penetration and reliably clears infection. Nystatin

some renal compensation, but the acute rise in $CO_2$ still drives the pH below normal.

**14.** (c) Idiopathic thrombocytopaenic purpura

Hemophilia A and B are X-linked recessive coagulopathies that predominantly affect males, making them less likely in a 40-year-old female with bleeding symptoms. Henoch-Schonlein purpura usually presents in children with a characteristic purpuric rash over buttocks and legs, often alongside abdominal pain and renal involvement. Idiopathic thrombocytopenic purpura (ITP) features low platelet counts leading to mucocutaneous bleeding (ecchymoses, menorrhagia, possible hematuria). Chronic ITP is more common in adult women and fits the six-month history of bleeding symptoms.

**15.** (c) Lead

Lead poisoning characteristically produces a motor neuropathy, often presenting as wrist drop or foot drop due to peripheral nerve involvement (particularly radial nerve). While other heavy metals can affect multiple organ systems (e.g., mercury primarily targets the central nervous system, cadmium the kidneys and lungs, thallium the hair follicles and nervous system), lead's hallmark is its predilection for motor nerve impairment. Chronic lead exposure can also lead to anemia and gastrointestinal symptoms, but the motor neuropathy is especially classic.

**16.** (b) Protein C deficiency

Warfarin-induced skin necrosis typically occurs a few days after initiating therapy, especially in patients with underlying Protein C deficiency. Protein C is a natural anticoagulant with a shorter half-life than most procoagulant factors. When warfarin is started, it rapidly decreases Protein C levels before reducing other clotting factors, temporarily creating a hypercoagulable state. This can lead to localized thromboses in the microvasculature of the skin, resulting in necrosis. Antiphospholipid syndrome, DIC, and TTP have distinct clinical contexts and do not specifically follow this warfarin timeline.

**17.** (c) Neisseria meningitidis

Neisseria meningitidis (the meningococcus) can cause fulminant meningococcemia, characterized by meningitis, petechial or purpuric rash, shock (very low blood pressure), and disseminated intravascular coagulation. Teenagers and young adults are particularly susceptible. Haemophilus influenzae type b once was a common cause of meningitis in children but less so now due to vaccination. Listeria is more common in neonates, older adults, or immunocompromised individuals, and Streptococcus pneumoniae often affects extremes of age but typically does not present with a purpuric rash and rapid shock.

**18.** (a) IgA nephropathy

IgA nephropathy (Berger's disease) classically presents with gross hematuria that occurs soon (often within days) after a respiratory or other mucosal infection. It results from IgA immune complex deposition in the mesangium. Post-streptococcal glomerulonephritis typically appears 1–3 weeks after a streptococcal infection and is more often associated with low complement levels. Wegener's granulomatosis (Granulomatosis with polyangiitis) and Churg-Strauss (Eosinophilic granulomatosis) involve systemic vasculitis and present with additional respiratory findings, not just isolated hematuria.

**19.** (b) 30-300 mg

Microalbuminuria is defined as a moderate increase in urinary albumin excretion: specifically, 30 to 300 mg over 24 hours. Below 30 mg/day is considered normal (normoalbuminuria), and values exceeding 300 mg/day are classified as macroalbuminuria or overt proteinuria. Early detection of microalbuminuria is clinically relevant, especially in patients with diabetes or hypertension, because it signals the onset of nephropathy and heightened cardiovascular risk. Monitoring urinary albumin allows for earlier intervention to prevent or slow renal disease progression.

**20.** (d) Metabolic alkalosis

Acute renal failure (acute kidney injury) commonly results in the retention of fluid (causing intravascular volume overload), inability to excrete potassium (leading to

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or steroids. Non-specific interstitial pneumonia, acute interstitial pneumonia, and cryptogenic organizing pneumonia have different etiologies and are not so characteristically tied to smoking as DIP is.

**50.** (c) Serum ceruloplasmin is increased

Wilson disease is an autosomal recessive disorder resulting in abnormal copper metabolism with deposition primarily in the liver and basal ganglia (hepatolenticular degeneration). Patients exhibit elevated urinary copper and decreased _serum_ ceruloplasmin (the copper-carrying protein), not an increase. Thus, statement (c) is not true. The lowered ceruloplasmin and consequent free copper accumulation underlie the disease's hepatic and neurological manifestations.

**51.** (d) Serum uric acid

Among first-line anti-TB drugs, _pyrazinamide_ commonly elevates serum uric acid levels and can precipitate gouty attacks or arthralgias. Therefore, patients complaining of joint pains while on a regimen including pyrazinamide should be evaluated for hyperuricemia. SGOT/SGPT (liver enzymes) can also be relevant if hepatitis is suspected, but the most direct test to check for pyrazinamide-induced arthropathy is _serum uric acid._

**52.** (d) Pityriasis rosea

Pemphigus vulgaris is an autoimmune bullous disorder with intraepidermal blisters. Bullous impetigo (caused by Staphylococcus aureus) features superficial bullae. Toxic epidermal necrolysis (TEN) leads to widespread epidermal detachment and bullae formation. By contrast, pityriasis rosea typically manifests as oval erythematous scaly lesions in a "Christmas tree" pattern on the trunk, _not_ true bullae. Thus, (d) is the condition in which bullous lesions are generally _not_ a feature.

**53.** (a) Cystic fibrosis

Cystic fibrosis results from mutations in the CFTR gene and follows an autosomal recessive inheritance pattern. Nail-patella syndrome and myotonic dystrophy are autosomal dominant. Huntington disease is also autosomal dominant, caused by expansions of CAG repeats in the HTT gene. Thus, among the listed options, only cystic fibrosis is autosomal recessive.

**54.** (b) Sodium bicarbonate

In significant salicylate toxicity, sodium bicarbonate is given IV to alkalinize the blood and urine. Alkaline urine traps salicylate ions in the tubular lumen, enhancing excretion and lowering serum salicylate levels. Acetazolamide is not the standard approach and can risk metabolic acidosis. N-acetyl-cysteine is the antidote for acetaminophen overdose, and allopurinol is for hyperuricemia/gout control. Therefore, sodium bicarbonate is the key therapy in aspirin overdose management.

**55.** (c) CD 8

Cytotoxic T lymphocytes (often called "killer T cells") specifically express the CD8 surface marker. Their primary role is to target and destroy cells harboring intracellular pathogens (e.g., viruses) and tumor cells. CD4 is typically found on helper T cells, CD5 can be present on T cells and some B cells, CD10 on pre-B cells and germinal center B cells, and CD2 is a pan–T cell marker but not the defining cytotoxic subset.

**56.** (b) Severe rheumatoid arthritis

IVIG is a key therapy in Kawasaki disease (to prevent coronary artery aneurysms), Guillain-Barré syndrome (to hasten recovery), and can be used in refractory dermatomyositis. While certain experimental or off-label uses exist, IVIG is _not_ a standard or commonly approved therapy for severe rheumatoid arthritis, which is generally managed with disease-modifying anti-rheumatic drugs (DMARDs), biologics (e.g., TNF inhibitors), and other immunosuppressants. Hence, (b) is the exception.

**57.** (c) Kawasaki disease

Kawasaki disease predominantly involves medium-sized vessels (especially coronary arteries), distinguishing it from classic small-vessel vasculitides. Churg-Strauss syndrome (now called eosinophilic granulomatosis with polyangiitis), Henoch-Schönlein purpura (IgA

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Congestive heart failure becomes more common with advancing age, typically spurred by conditions like coronary artery disease and long-standing hypertension. The elderly also frequently develop diastolic dysfunction due to stiffening of the left ventricle. However, loop diuretics may cause significant electrolyte imbalances, hypovolemia, and renal function changes in older adults. They are not necessarily "well tolerated," as older patients are more prone to side effects such as dehydration, acute kidney injury, and arrhythmias.

**28.** (c) At least resistance to Isoniazid and Rifampicin

Multidrug-resistant tuberculosis (MDR-TB) is officially defined as TB caused by strains of Mycobacterium tuberculosis that are resistant to at least isoniazid (INH) and rifampicin—two of the most potent first-line drugs. Resistance to other first-line agents (e.g., streptomycin, ethambutol, pyrazinamide) can occur too, but the critical criterion for MDR status is resistance to both INH and rifampicin. Extensively drug-resistant TB (XDR-TB) adds resistance to fluoroquinolones and at least one second-line injectable, but that is beyond the standard MDR definition.

**29.** (b) Pulsus parvus et tardus

A classic physical finding in significant aortic stenosis is a slow-rising, small-volume pulse known as pulsus parvus et tardus ("weak and late"). The stenotic aortic valve impedes blood flow during systole, causing the pulse to peak later and remain diminished in amplitude. Pulsus paradoxus is more typical of conditions like cardiac tamponade, while pulsus alternans and bigeminus are generally related to left ventricular systolic dysfunction or arrhythmias.

**30.** (d) 1, 2 and 3

All three conditions listed increase thrombotic risk. Protein C deficiency removes an important natural anticoagulant, promoting clot formation. Antiphospholipid syndrome features autoantibodies that enhance thrombosis in arterial or venous circulations. Homocystinemia also predisposes to both arterial and venous thrombosis, partially through endothelial injury. Thus, all 1 (Protein C deficiency), 2 (Antiphospholipid syndrome), and 3 (Homocystinemia) are recognized hypercoagulable states.

**31.** (a) 0

The CURB-65 score estimates pneumonia severity based on: Confusion (absent here), Urea 20 mg/dL or BUN 19 mg/dL (his is 18 mg/dL, below threshold), Respiratory rate $\geq$ 30/min (he has 22/min), low Blood Pressure (<90 systolic or $\leq$60 diastolic—he's at 120 systolic), and age $\geq$65 (he is only 20). He meets none of the criteria, so his CURB score is 0, implying relatively low severity and potentially suitable for outpatient treatment.

**32.** (d) Marfan syndrome

Marfan syndrome is inherited in an autosomal dominant fashion, caused by mutations in the FBN1 gene coding for fibrillin-1. G-6PD deficiency is X-linked recessive, often presenting with hemolytic anemia under oxidative stress. Sickle cell disease and Fanconi anemia both follow autosomal recessive patterns. Thus, among the listed conditions, only Marfan syndrome demonstrates autosomal dominant inheritance.

**33.** (b) 3, 4 and 5 only

Statement 1 is false because inhaled $\beta_2$ agonists (via aerosol) are generally more effective and have fewer systemic side effects than oral forms. Statement 2 is false because inhaled corticosteroids _are not_ contraindicated in severe acute asthma, though systemic steroids are often more critical. Statements 3, 4, and 5 are correct: oral (or IV) steroids are often required in severe acute episodes, anticholinergics (e.g., ipratropium) block muscarinic receptors, and salmeterol/formoterol are indeed long-acting selective $\beta_2$ agonists.

**34.** (b) Pulmonary opacities in chest X ray

Massive pulmonary embolism often presents with severe hypoxemia ($\downarrow PaO_2$) and respiratory alkalosis ($\downarrow PaCO_2$) due to hyperventilation. ECG may reveal the classical $S_1Q_3T_3$ pattern and/or

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listed options, Menetrier disease is the least likely cause of chronic diarrhea and significant malabsorption.

**65.** (b) 2, 3 and 4 only

Post-streptococcal glomerulonephritis typically appears 1–3 weeks after a group A strep pharyngeal infection, or 2–6 weeks following a skin (impetigo) infection. It generally presents with acute nephritic syndrome (hematuria, edema, hypertension). Immunosuppressive therapy (beyond supportive care, antibiotics, and controlling blood pressure/volume) is _not_ usually required or effective in straightforward PSGN. Thus, statements 2, 3, and 4 are correct, whereas statement 1 is not.

**66.** (c) Superior vena cava obstruction

Superior vena cava (SVC) obstruction or "SVC syndrome" involves impaired blood return from the head and upper extremities to the heart. It causes venous congestion in the neck and face, leading to swelling, distended neck veins, and sometimes respiratory or swallowing difficulties. Symptoms can worsen when supine because venous return is further compromised. Cardiac tamponade and pulmonary embolism present differently, while an intracardiac thrombosis typically produces other hemodynamic or embolic features rather than prominent facial/neck swelling.

**67.** (d) Thiamine

Wernicke's encephalopathy, caused by thiamine (vitamin $B_1$) deficiency, classically presents with the triad of ophthalmoplegia (eye movement abnormalities), ataxia (unsteady gait), and confusion or altered mental status. While often linked with alcoholism, it can also occur in malnourished or immunocompromised states such as AIDS. Niacin deficiency causes pellagra (dermatitis, diarrhea, dementia), pyridoxine deficiency leads to peripheral neuropathy and other issues, and biotin deficiency typically manifests with dermatitis and hair loss.

**68.** (b) Bronchiectasis

Bronchiectasis is characterized by irreversible dilatation of bronchi, resulting in recurrent infections, chronic production of large amounts of purulent sputum, and frequent exacerbations. Digital clubbing is common in chronic suppurative lung diseases, including bronchiectasis. Empyema is a localized pus collection in the pleural space, whereas bronchopneumonia is an acute infection of the lung parenchyma. Necrotizing pneumonia can cause lung abscesses but is not the prototypical cause of chronic, large-volume purulent sputum with repeated episodes.

**69.** (a) Hypersensitivity pneumonitis

Hypersensitivity pneumonitis (extrinsic allergic alveolitis) results from an immune-mediated reaction to inhaled organic antigens or occupational exposures. An acute episode typically begins a few hours after exposure, causing fever, chills, malaise, cough, and dyspnea, and it often resolves within a few days once the person is removed from the offending agent. Atypical pneumonia and the other listed interstitial lung diseases usually present over longer durations or with different clinical patterns.

**70.** (b) Bacillus cereus

Bacillus cereus food poisoning is classically linked to reheated or improperly stored rice dishes. Two syndromes exist: a rapid-onset emetic form (often from fried rice) and a longer-onset diarrheal form. Clostridium perfringens typically involves meats or poultry with a somewhat longer incubation period. Staphylococcus aureus toxin ingestion often has a very short incubation (1–6 hours) but is more commonly associated with dairy or creamy foods. Campylobacter jejuni usually presents with fever and dysentery-type diarrhea over a longer course.

**71.** (a) Nephrotic syndrome, infrequent relapses

Infrequent relapses occur if a child has fewer than two relapses in six months or fewer than four in 12 months. Frequent relapser status requires two or more relapses in six months or four or more in a year. Steroid dependence implies relapse while on steroid therapy or within two weeks of stopping. Steroid resistance refers to failure to achieve remission on

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services like savings, credit, remittance, and insurance. While cashless transactions and financial literacy are beneficial offshoots, the scheme's primary goal is to bring the unbanked population into the formal banking system.

**102.** (d) Organic farming

The Paramparagat Krishi Vikas Yojana (PKVY) is a scheme launched by the Indian government to support and promote organic farming through cluster-based programs. Farmers receive financial assistance, technical guidance, and marketing support to adopt eco-friendly and sustainable agricultural practices without synthetic fertilizers or pesticides.

**103.** (c) Sugarcane

Sugarcane is notably water-intensive, requiring a high volume of irrigation, especially in subtropical/tropical regions. Wheat, finger millet (ragi), and grapes, although needing irrigation, typically consume less water compared to sugarcane. Consequently, sugarcane is often cited in discussions regarding water sustainability challenges.

**104.** (d) 1, 2, 3 and 4

Nanotechnology's ability to manipulate matter at the nanoscale has broad utility. It is being explored for targeted drug delivery (1), cutting-edge microelectronics (2), novel packaging or additive formulations in food processing (3), and advanced filtration or adsorption techniques in water purification (4). Thus, it has applications in all four listed areas.

**105.** (c) Both 1 and 2

Only the Lok Sabha (the lower house) can originate Money Bills. The Rajya Sabha can propose amendments but cannot reject such bills outright. Moreover, a no-confidence motion can be moved and passed solely in the Lok Sabha, leading to the resignation of the Council of Ministers if carried by a majority. The Rajya Sabha has no such power to pass a no-confidence motion that compels the government to step down.

**106.** (d) Elected members of Vidhan Parishads

The President of India is elected by an Electoral College consisting of:

1. Elected Members of both Houses of Parliament (Lok Sabha and Rajya Sabha), and
2. Elected Members of the Legislative Assemblies (Vidhan Sabhas) of states and certain Union Territories.

Legislative Councils (Vidhan Parishads), however, do not form part of this Electoral College. Hence, "elected members of Vidhan Parishads" do not participate in the election of the President.

**107.** (a) Cosmetics

Plastic microbeads are tiny spherical particles of plastic commonly found in products like facial scrubs, toothpastes, and some body washes to aid exfoliation. Their widespread use in cosmetics and personal care products has prompted opposition because they contribute to microplastic pollution in waterways. They are not standard components of electronics, wooden furniture, or synthetic textiles in the same sense.

NODIA

**108.** (a) 1 only

India does license and allow opium poppy cultivation in specific districts (e.g., parts of Madhya Pradesh, Rajasthan, Uttar Pradesh) for medicinal and export purposes. As for statement 2, hydraulic fracturing ("fracking") fluids frequently use _guar_ gum derived from cluster beans, not opium gum. Thus, statement 2 is incorrect, while statement 1 is correct.

**109.** (a) Air-conditioning machines

Hydrofluorocarbons (HFCs) are a class of refrigerants widely used in air conditioners and refrigerators. They replaced older chlorofluorocarbons (CFCs) but still pose a greenhouse gas threat. Cooking gas cylinders (LPG), water heaters (gas geysers), and microwave ovens do not customarily rely on HFCs as a refrigerant medium. Hence, the correct household source is air-conditioning equipment.

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has different findings, and TAPVC has other distinctive features.

**79.** (a) Cerebral palsy

Although cerebral palsy can present with spasticity in many cases, some children initially appear hypotonic ("floppy") before developing clear upper motor neuron signs like brisk deep tendon reflexes and clonus. The delayed motor milestones (head control only by one year, never walked) point toward a chronic neurodevelopmental disorder. Spinal muscular atrophy would show hypotonia but typically with _decreased_ or absent reflexes. Congenital hypothyroidism also causes motor delays and hypotonia, but reflexes are not classically brisk, and myotonic dystrophy presents differently.

**80.** (a) Epidemic keratoconjunctivitis

Epidemic keratoconjunctivitis (EKC), typically caused by adenoviruses, presents with acute onset of redness, tearing, photophobia, and foreign-body sensation. Characteristic findings include prominent follicular reaction (often large follicles) on the palpebral conjunctiva and tender preauricular lymph nodes. Vernal conjunctivitis is more allergic and usually shows "cobblestone" papillae on the upper tarsus, while trachoma has its own set of follicular changes and Herbert's pits. Phlyctenular keratoconjunctivitis presents with small nodular lesions at the corneal limbus.

**81.** (b) Legg Calve Perthes disease

Legg–Calvé–Perthes disease typically occurs in children aged 4–8 years and presents with an intermittent limp and hip/groin pain. Restricted abduction and internal rotation are classic exam findings. Early in the disease, X-rays may be normal or show only subtle changes. Transient synovitis often has a more abrupt onset, sometimes with mild fever. Slipped capital femoral epiphysis is more common in slightly older, often overweight children, and osteochondritis dissecans typically affects the knee or other joints rather than the hip.

**82.** (a) Carbamates

Excess salivation, lacrimation, urination, defecation, gastrointestinal upset, and emesis (often abbreviated SLUDGE) along with miosis strongly suggest an acute cholinergic (parasympathomimetic) syndrome. Organophosphates and carbamates both inhibit acetylcholinesterase, resulting in high acetylcholine levels. Opioids generally cause respiratory depression and pinpoint pupils but not the pronounced GI and secretory symptoms. Phenothiazines and tricyclic antidepressants produce distinctly different toxidromes. Therefore, carbamate poisoning best fits these findings.

**83.** (a) Surfactant Protein B deficiency

Congenital surfactant protein B deficiency is a rare but severe disorder leading to refractory respiratory failure shortly after birth. Infants do not improve adequately even with exogenous surfactant administration, mechanical ventilation, or ECMO. Primary ciliary dyskinesia tends to present later with recurrent infections; persistent tachypnea of infancy is typically milder. Lymphocytic interstitial pneumonitis is more common in certain immunodeficiency states. The severe, treatment-resistant course described strongly suggests Surfactant Protein B deficiency.

**84.** (a) Pit viper

Pit viper (e.g., Russell's viper) envenomation often causes a hemotoxic syndrome with coagulopathy, bleeding tendencies (petechiae, ecchymosis, oozing from puncture sites), and renal complications (acute kidney injury). Cobras and mambas primarily cause neurotoxic features (ptosis, ophthalmoplegia, respiratory paralysis). Pythons are nonvenomous constrictors that typically do not produce a systemic envenomation syndrome. Thus, the described bleeding diathesis and oliguria align most closely with pit viper envenomation.

**85.** (b) Klippel Feil syndrome

Klippel–Feil syndrome is characterized by the congenital fusion of cervical vertebrae, leading to a short neck, low posterior hairline, and limited neck motion. Sprengel anomaly (congenital elevation of the scapula) and scoliosis are also

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**119.** (a) 1 and 2 only

Calcium propionate is a common anti-fungal preservative in bread. Potassium metabisulphite is widely used to inhibit microbial growth in juices and other foods. Lecithin is primarily an emulsifier, not a typical antimicrobial preservative. So (1) and (2) are valid preservatives, (3) is not.

**120.** (a) An initiative to help tobacco users to quit tobacco

"M-cessation" is a mobile-based intervention under the National Tobacco Control Program (Government of India) to help tobacco users quit. It sends supportive messages, tips, and motivational reminders to smokers/chewers encouraging them to stay off tobacco. It is not focused on pregnancy or child care messaging, financial transactions, or narcotics eradication.

END

NODIA

Hawaii, and Andaman represent other notable island chains but are not where the Great Barrier Reef is located.

**93.** (b) Attorney General of India

The Attorney General of India, appointed by the President under Article 76 of the Indian Constitution, is the highest law officer in the country. He/she advises the Government of India upon legal matters and performs other duties of a legal character referred or assigned by the President. The Chief Justice of India heads the judiciary, the Law Secretary is a bureaucratic position, and the Law Minister is a Cabinet portfolio but not the "first law officer."

**94.** (d) All of these

A powerful predictive tool for how non-coding DNA regulates genes can facilitate multiple applications: identifying novel therapeutic targets for genetic diseases, guiding beneficial gene edits in crops or livestock, and accelerating cloning or genetic manipulation efforts. Though each listed benefit addresses different aspects of biotechnology, accurate mapping of regulatory DNA–gene interactions (i.e., "Target Finder") could potentially aid all these goals.

**95.** (c) 1, 2 and 3

Electronic waste often contains precious metals such as gold, silver, and even small amounts of platinum or palladium (used in circuit boards, connectors, and other components). E-waste recycling efforts frequently focus on recovering these valuable metals. Hence, all three (gold, platinum, and silver) can be found in discarded electronics.

**96.** (c) Starch

The iodine test for starch is a classic qualitative test: when iodine solution (often Lugol's iodine) is added to a sample containing starch, a deep blue-black color appears. Fructose, gram flour (besan), or urea do not produce this blue-black complex with iodine.

**97.** (d) Rhizobium

In paddy fields, Azolla (a fern containing symbiotic cyanobacteria), Azospirillum, and certain blue-green algae (cyanobacteria) are all known to fix nitrogen and enrich soil fertility in flooded rice environments. Rhizobium, on the other hand, typically forms symbiotic nodules on legume roots (e.g., peas, beans) rather than on rice. Hence, Rhizobium is not generally employed as a biofertilizer for rice.

**98.** (a) Arsenic

Certain regions of West Bengal (and neighboring Bangladesh) have well-documented issues with naturally high levels of arsenic in groundwater, leading to chronic arsenic poisoning in populations dependent on tube-wells. Clinical effects can include skin lesions, peripheral neuropathy, and increased cancer risk. Cyanide, lead, and polonium contaminations are not typical large-scale groundwater problems in that area.

**99.** (d) Sugar mills

Ethanol is commonly produced from molasses, a byproduct of sugar production. India's Ethanol Blended Petrol (EBP) program sources ethanol predominantly through sugar mills/distilleries that ferment molasses into ethanol. Cosmetic, food processing, or fertilizer industries are not the main suppliers for fuel-grade ethanol in India.

**100.** (d) Neither 1 nor 2

The 2016 Act—often linked with the Aadhaar framework—primarily facilitates targeted delivery of subsidies and benefits via Direct Benefit Transfer (DBT). It does not explicitly aim to "strengthen PM Jan Dhan Yojana" nor to "provide funds for farmer relief." While the Act _can_ interact with various government schemes, its principal purpose is authenticating beneficiaries and ensuring subsidies/services reach them directly—not specifically focusing on Jan Dhan or direct farmer relief funds.

**101.** (a) Financial inclusion

Launched in 2014, the Pradhan Mantri Jan Dhan Yojana (PMJDY) focuses on ensuring that every household in India has access to at least one basic bank account, thereby promoting financial inclusion and access to financial

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# QUESTION PAPER 2016

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1. A 40-year old male is admitted with acute inferior wall myocardial infarction. Half an hour later his B.P. is 80/50 mm Hg and heart rate is 40/minute with sinus rhythm. The most appropriate step in the management of this patient would be:
   (a) Administration of normal saline 300 ml over 15 minutes
   (b) Immediate insertion of temporary pacemaker
   (c) Intravenous administration of atropine sulfate
   (d) Intravenous administration of iso-prenaline 50 μg/minute

2. The characteristic feature of tricuspid insufficiency in the jugular venous pulse is:
   (a) Prominent 'a' wave
   (b) Exaggerated 'x' and 'y' descents
   (c) Cannon waves
   (d) Obliteration of the 'x' descent and prominent 'CV' wave

3. Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Clinical Features)** | | **List II (Diagnosis)** |
|---|---|---|---|
| A. | Osler's node | 1. | Patent ductus arteriosus with reversal of shunt |
| B. | Differential cyanosis | 2. | Aortic stenosis with aortic regurgitation |
| C. | Bisferiens pulse | 3. | Pulmonary hypertension |
| D. | Graham Steell murmur | 4. | Subacute bacterial endocarditis |

   (a) A-4 B-1 C-2 D-3
   (b) A-4 B-1 C-3 D-2
   (c) A-1 B-4 C-2 D-3
   (d) A-1 B-4 C-3 D-2

4. Acute aortic regurgitation occurs in:
   (a) Infective endocarditis
   (b) Ankylosing spondylitis
   (c) Marfan's syndrome
   (d) Rheumatoid arthritis

5. The following are early complications of acute myocardial infarction except:
   (a) Papillary muscle dysfunction
   (b) Ventricular septal defect
   (c) Ventricular free wall rupture
   (d) Dressler's syndrome

6. For which one of the following serum proteins, the levels of protein do not decrease in nephrotic syndrome?
   (a) Albumin
   (b) Transferrin
   (c) Fibrinogen
   (d) Ceruloplasmin

7. Following are the causes of high anion-gap acidosis except:
   (a) Renal tubular acidosis
   (b) Acute renal failure
   (c) Chronic renal failure
   (d) Diabetic ketoacidosis

8. A patient of cirrhosis develops oliguria and worsening azotemia. Urinary sediment is normal. Urinary sodium concentration is 5 mEq/L. The most likely cause could be:
   (a) Interstitial nephritis
   (b) Acute tubular necrosis
   (c) Acute glomerulonephritis
   (d) Hepato-renal syndrome

9. Which one of the following infections is related to subacute sclerosing panencephalitis (SSPE)?
   (a) HIV
   (b) Measles virus
   (c) Japanese B encephalitis virus

**110.** (d) Neither 1 nor 2

The Cartagena Protocol on Biosafety (under the Convention on Biological Diversity) deals primarily with the safe handling, transport, and use of living modified organisms (LMOs) that may affect biodiversity and human health. It is not about establishing in-situ conservation sites for rare species or maintaining global gene banks. Instead, it focuses on the procedures, risk assessments, and advanced informed agreements concerning transboundary movements of GMOs/LMOs.

**111.** (c) 1 and 3 only

Sloth bears occur across the Indian subcontinent in forested regions. The hoolock gibbon is native to Northeast India (and parts of Bangladesh and Myanmar), making it India's only ape. Jaguars, however, are found in the Americas (Central and South America) rather than Asia. So among the listed species, only (1) Sloth bear and (3) Hoolock gibbon are found in India.

**112.** (c) Both 1 and 2

Species richness typically increases closer to the tropics (lower latitudes) and generally decreases toward the poles (higher latitudes). Likewise, as one ascends mountains, temperatures drop and conditions become more hostile, often reducing the number of species found at higher elevations. Hence, biodiversity is typically higher in lower altitudes.

**113.** (a) Aspergillus flavus

Aflatoxins are mycotoxins produced predominantly by Aspergillus flavus (and sometimes A. parasiticus), commonly contaminating stored grains, nuts, and other food products under warm, humid conditions. Candida albicans causes candidiasis, Cryptococcus neoformans causes cryptococcosis, and Coccidioides species cause coccidioidomycosis, none of which produce aflatoxins.

**114.** (d) 1 only

Munnar, in Kerala's Western Ghats, is famous for its extensive tea estates. Mandi (Himachal Pradesh) is not traditionally recognized for major tea cultivation (Kangra district is known in that region). Krishna district (in Andhra Pradesh) is not a tea-growing belt. Hence, only Munnar (1) is famously associated with tea plantations.

NODIA

**115.** (d) Thermal power plants

Fly ash is a byproduct of burning pulverized coal in thermal power stations. The fine particles rise with flue gases and are captured by electrostatic precipitators. Brick kilns, motor vehicles, and sewage plants can produce other emissions but not the classical "fly ash" associated with coal combustion.

**116.** (c) for fruit ripening

Calcium carbide ($CaC_2$) reacts with moisture to produce acetylene gas, which hastens the ripening of fruits (especially mangoes, bananas). Although it is discouraged or banned for safety reasons in many places, it remains a known method of artificial ripening. It is not typically employed as a rodent killer, insecticide, or soil salinity reducer.

**117.** (c) Both 1 and 2

Benzoic acid and sorbic acid are common preservatives with antimicrobial properties, inhibiting molds, yeasts, and some bacteria. Meanwhile, citric acid is often added to cut fruits or vegetables to reduce enzymatic browning, partly by lowering pH and chelating metal ions necessary for oxidation. Thus both statements are accurate.

**118.** (b) 2 only

Baker's yeast (for bread-making) indeed comes from carefully selected single-colony isolates of _Saccharomyces cerevisiae_. However, while lactic acid bacteria (LAB) can ferment various sugars (lactose, glucose, etc.) to produce lactic acid, they cannot ferment _all_ monosaccharides or _any_ polysaccharide indiscriminately. Many LAB cannot break down complex polysaccharides like cellulose. Hence, statement 1 is overly broad/incorrect, whereas statement 2 is correct.

standard steroid doses. Since this child has had three relapses spread over 18 months, he fits the "infrequent relapses" category.

**72.** (b) Tissue transglutaminase antibodies

A child with growth failure, chronic mild abdominal symptoms, and iron deficiency anemia unresponsive to iron supplementation raises the suspicion of celiac disease. The initial screening test is typically serum IgA anti-tissue transglutaminase (tTG) antibodies. If positive, confirmatory endoscopic biopsy of the small intestine can be done. Bone marrow aspiration is more relevant for suspected aplastic anemia or hematological disorders. Lower GI studies and colonoscopies are not first-line for suspected malabsorption in celiac disease.

**73.** (a) Fluid resuscitation with crystalloids

In any acute gastrointestinal bleed, especially with ongoing hematemesis, the first priority is to stabilize circulation by ensuring adequate volume status. Crystalloid fluid resuscitation helps maintain blood pressure, tissue perfusion, and organ function. Vasoactive drugs (vasopressin, octreotide) or beta-blockers (propranolol) might be considered subsequently for portal hypertension/variceal bleeding, but not before initial resuscitation. Transdermal nitroglycerin alone is not the primary therapy for acute upper GI bleeding in a child.

**74.** (b) Intravenous labetalol infusion

Severe hypertension with encephalopathy (headaches, seizures, visual changes, papilledema/retinopathy) requires careful, controlled blood pressure reduction. Intravenous labetalol (or other IV antihypertensive infusions like sodium nitroprusside) is recommended for acute pediatric hypertensive emergencies. Sublingual nifedipine is discouraged due to risks of precipitous hypotension and reflex tachycardia. While diuretics (e.g., furosemide) may help in certain cases, they are not first-line for acute hypertensive encephalopathy. Minoxidil is typically used orally for refractory hypertension, not usually first-line IV therapy.

**75.** (b) Start child on thyroxine immediately

A TSH 20–40 mU/L on newborn screening is highly suspicious for congenital hypothyroidism. Early intervention is critical to prevent irreversible neurodevelopmental impairment. While a confirmatory venous sample is often done, many protocols recommend initiating treatment promptly (often before two weeks of age) if TSH is significantly elevated, because any delay can affect neurological outcomes. Therefore, the safest course is to start thyroxine while confirming the diagnosis, rather than waiting weeks before rechecking levels.

**76.** (d) Detection of IgM antibodies for dengue

During the first few days (roughly days 1–5) of dengue illness, the NS1 antigen is a useful marker. However, by day 5–7, the NS1 antigen levels often decline. IgM antibodies to dengue virus typically become detectable around day 4–5 of illness and peak in the second week. Given this child's seven-day history of fever, detecting dengue-specific IgM antibodies is the most appropriate and sensitive test for confirming recent infection.

**77.** (a) Relapse

Plasmodium vivax and P. ovale form hypnozoites in the liver, which can reactivate weeks to months later, causing "relapses." "Recrudescence" typically refers to the persistence of parasites in the blood that flare up again, more commonly in P. falciparum. A truly "new infection" would be less likely if the child was effectively cleared, and the same species recurs within weeks. Therefore, renewed symptoms with P. vivax positivity after an asymptomatic period is most often a relapse from liver hypnozoites.

**78.** (b) Tricuspid atresia

Tricuspid atresia results in the absence or underdevelopment of the right ventricle and a mandatory atrial or ventricular septal defect. Clinically, it often features a single second heart sound (due to the lack of a normal pulmonary component) and a murmur from a VSD. On ECG, left axis deviation is characteristic because the right ventricle is rudimentary, while the left ventricle hypertrophies. Tetralogy of Fallot typically shows right axis deviation, TGA often

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often associated. Atlantoaxial instability is more commonly linked to conditions like Down syndrome or rheumatoid arthritis. Noonan syndrome presents with short stature, distinct facial features, and potential heart defects but not typically fused cervical vertebrae. Sandifer syndrome involves spasmodic torsion of the neck with GERD.

**86.** (b) Fluticasone

Intranasal corticosteroids (e.g., fluticasone) are considered first-line therapy for persistent allergic rhinitis in children, addressing nasal congestion, rhinorrhea, and itching effectively. Second-generation oral antihistamines (like cetirizine) are helpful too but often less effective for significant nasal blockage. Diphenhydramine (a first-generation antihistamine) can cause sedation and is not the best long-term choice. Ipratropium bromide nasal spray primarily helps with watery rhinorrhea but is not the mainstay therapy.

**87.** (d) Chediak Higashi syndrome

Chediak–Higashi syndrome is an autosomal recessive disorder featuring partial oculocutaneous albinism, recurrent infections, and the presence of giant granules in leukocytes (peroxidase-positive inclusions). It reflects a defect in lysosomal trafficking, leading to abnormal granule fusion. Hermansky–Pudlak syndrome also causes albinism with bleeding issues but not typically giant lysosomal granules. Waardenburg syndrome involves hearing loss and pigmentary changes. Angelman syndrome causes severe developmental delays, ataxia, and characteristic "happy" demeanor, unrelated to giant granules.

**88.** (b) Increasing intake of vegetables and cereals

In a one-year-old who is primarily on milk feeds and now constipated without any impaction, the first step is to diversify the diet to include more fiber (vegetables, fruits, cereals) and adequate fluid intake. This often helps correct mild constipation. Pharmacologic interventions (lactulose, polyethylene glycol, magnesium hydroxide) are typically considered if dietary measures fail or the child has refractory symptoms or fecal impaction.

**89.** (a) Tuberous sclerosis

Tuberous sclerosis complex (TSC) often features seizures, intellectual disability, and characteristic skin findings including hypomelanotic macules ("ash leaf spots") and facial angiofibromas (formerly called adenoma sebaceum)—tiny red or pink nodules over the nose and cheeks. Sturge–Weber syndrome typically involves a facial port-wine stain (nevus flammeus) in the trigeminal area. PHACE syndrome is a complex vascular disorder with large facial hemangiomas. Neurofibromatosis type 1 causes café-au-lait spots, neurofibromas, and Lisch nodules in the iris, not the described facial angiofibromas.

**90.** (c) Loop diuretics

High-dose or prolonged use of loop diuretics (e.g., furosemide) can be ototoxic, leading to bilateral sensorineural hearing loss. Cholesteatoma typically produces conductive hearing loss (and can be unilateral), whereas histiocytosis or glomus tumors have different mechanisms that commonly affect one ear or present differently. Loop diuretics rank among the recognized ototoxic drugs (along with aminoglycosides, cisplatin, etc.) that can cause bilateral sensorineural impairment.

**91.** (d) The Speaker of Lok Sabha

When a joint sitting of both Houses of India's Parliament (Lok Sabha and Rajya Sabha) is convened to break a legislative deadlock, it is the Speaker of the Lok Sabha (or, in the Speaker's absence, the Deputy Speaker) who presides. The Vice President of India is the ex officio Chairman of the Rajya Sabha, but does not preside over the joint session. The President summons the sitting but does not preside, and the Prime Minister does not hold that presiding role.

**92.** (a) Queensland

The Great Barrier Reef stretches along the northeastern coast of Australia, primarily off the coast of Queensland in the Coral Sea. It is the world's largest coral reef system and is vulnerable to bleaching events caused by factors such as rising sea temperatures. Maldives,

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(d) JC virus

**10.** Consider the following:
1. Failure to swing the arms while walking
2. Nystagmus
3. Cogwheel rigidity
4. Festinant gait

Typical features of Parkinsonism include which of the above?
(a) 2, 3 and 4
(b) 1, 2 and 4
(c) 1 and 3 only
(d) 1, 3 and 4

**11.** Consider the following sites of lesion:
1. Left optic tract
2. Left optic radiation
3. Optic chiasma
4. Left lateral geniculate body

Right homonymous hemianopia will result from lesions at which of the above?
(a) 1 and 3 only
(b) 1, 2 and 4
(c) 2, 3 and 4
(d) 1, 2 and 3

**12.** Raised alkaline phosphatase is seen in the following except:
(a) Hyperparathyroidism
(b) Obstructive jaundice
(c) Osteomalacia
(d) Multiple myeloma

**13.** Consider the following statements about acromegaly:
1. Fibroma molluscum and acanthosis nigricans are common findings.
2. Growth hormone secretion is increased by TRH in 50 to 80% of acromegalics.
3. Acroosteolysis is a common radiological finding.
4. Diabetes mellitus may be associated in nearly 25% of acromegalics.

Which of the statements given above are correct?
(a) 1, 2 and 3
(b) 1, 3 and 4
(c) 1, 2 and 4
(d) 2, 3 and 4

**14.** Causes of hypomagnesemia include all of the following except:
(a) Betablocker
(b) Chronic pancreatic insufficiency
(c) Poorly controlled diabetes mellitus
(d) Alcoholism

**15.** Which of the following conditions are associated with secondary diabetes mellitus?
1. Thyrotoxicosis, pheochromocytoma and acromegaly
2. Haemochromatosis
3. Pancreatic carcinoma

Select the correct answer using the code given below:
(a) 2 and 3 only
(b) 1, 2 and 3
(c) 1 and 3 only
(d) 1 and 2 only

**16.** Consider the following statements:
1. Boils/suppurative lesions around the nose must be promptly treated with antibiotics.
2. Suppurative lesions around the nose lead to cavernous sinus thrombosis.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

NODIA

**17.** Which one of the following is not the ECG change of hyperkalemia?
(a) Tall T-wave
(b) Tall P-wave
(c) Prolonged PR interval
(d) QRS- widening

**18.** Which one of the following tests has the highest chance of detecting HIV infection in a blood donor during the window period?
(a) Demonstration of antibody to HIV by ELISA
(b) CD4 count
(c) p24 antigen detection

**94.** 'Nagoya Protocol', sometimes seen in news refers to:
(a) Convention on International Trade in Endangered Species of Wild Fauna and Flora
(b) Convention on the Conservation of Migratory Species of Wild Animals
(c) Convention on Biological Diversity
(d) Convention on Wetlands of International Importance especially as Waterfowl Habitat

**95.** Some substances known as 'Short-Lived Climate Forcers' (SLCF) assume importance in the context of climate change. Which of the following is/are SLCF?
1. Black carbon
2. Carbon dioxide
3. Hydrofluorocarbons
4. Methane

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 1, 3 and 4 only
(c) 3 and 4 only
(d) 1, 2, 3 and 4

**96.** Consider the following statements:
1. Production of cement blended with fly ash or slag (blended cement) is less energy efficient compared to the production of ordinary portland cement.
2. 'Electricity and heat production' together constitute the single largest contributor of greenhouse gases in India.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**97.** What is the present share of agriculture and allied sectors in the Gross Domestic Product of India?
(a) Less than 20%
(b) Between 20% and 30%
(c) Between 31% and 35%
(d) Above 35%

**98.** The global warming potential is highest among which of the following greenhouse gases?
(a) $CO_2$
(b) $CH_4$
(c) $N_2O$
(d) $SF_6$

**99.** Which of the following is/are included in Kyoto Protocol?
1. Brominated flame retardants
2. Methyl alcohol
3. Hydrofluorocarbons

Select the correct answer using the code given below:
(a) 1 and 2
(b) 2 and 3
(c) 3 only
(d) 1 only

**100.** In the context of food processing, the addition of sulfites (sulphites) to fruits and vegetables has which of the following effects?
1. Prevention of browning
2. Increase in sour taste
3. Destruction of thiamine
4. Preservation of thiamine

Select the correct answer using the code given below:
(a) 1 and 3 only
(b) 2 and 3 only
(c) 2 and 4
(d) 1, 2 and 3

**101.** Which of the following has/have antioxidant properties?
1. Ascorbic acid
2. Butylated hydroxyanisole (BHA)
3. Stannous chloride
4. Tocopherol

Select the correct answer using the code given below:
(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1 and 4 only
(d) 1, 2, 3 and 4

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(d) A-3 B-1 C-2 D-4

**27.** The following drugs are useful in generalized anxiety disorders except:
(a) Resperidone
(b) Amitriptyline
(c) Buspirone
(d) Venlafaxine

**28.** Systemic inflammatory response syndrome (SIRS) can have the following features except:
(a) Hypothermia
(b) Bradycardia
(c) Tachypnea
(d) Leucopenia (WBC < 4000)

**29.** Which of the following is not a complication of malaria?
(a) ARDS
(b) Acidosis
(c) Hyperglycaemia
(d) Coma

**30.** Cardiac troponin may be elevated in:
(a) Muscular dystrophy
(b) Chronic kidney failure
(c) Acute liver failure
(d) Epilepsy

**31.** Which of the following are the physiological abnormalities in chronic obstructive lung disease?
1. Reduced total lung capacity (TLC)
2. Increased functional residual capacity (FRC)
3. Increased residual volume (RV)
4. Increased RV/TLC ratio

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 3 and 4 only

**32.** Consider the following statements:
Acute respiratory distress syndrome characteristically occurs in
1. Gram negative septicaemia
2. Gastric aspiration
3. Pancreatitis
4. Severe burns
5. Myocarditis

Which of the statements given above are correct?
(a) 2, 3, 4 and 5
(b) 1, 3, 4 and 5
(c) 1, 2 and 5
(d) 1, 2, 3 and 4

**33.** Botulism can have the following clinical features except:
(a) Hyperpyrexia
(b) Sudden onset quadriplegia
(c) Cranial nerve deficits
(d) Respiratory failure

**34.** A 55-year old man, non-smoker, presents with sudden onset of shortness of breath. On examination, pulse rate is 110/minute and B.P. 180/110 mm Hg. Patient is restless and anxious. Examination of chest shows bilateral rhonchi and crepitations. S3 gallop is heard on auscultation of precordium. There is no history of chronic bronchitis. The most likely diagnosis is:
(a) Bronchial asthma
(b) Acute LVF
(c) Pneumothorax
(d) Acute exacerbation of COPD

**35.** Consider the following statements:
Small cell carcinoma of lung is commonly associated with the following paraneoplastic syndromes:
1. Ectopic ACTH production
2. Lambert-Eaton syndrome
3. Syndrome of inappropriate ADH (SIADH)
4. Addison's disease

Which of the statements given above are correct?
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

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(d) Western blot test

**19.** Which of the following features are characteristic of tuberculoid leprosy?
1. Type 2 lepra reaction
2. A few lesions with well demarcated edges
3. Early and marked nerve damage
4. Tendency to heal spontaneously

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1 and 4
(d) 2 and 3 only

**20.** Which one of the following immunological reactions occurs in Goodpasture's syndrome?
(a) Type I Atopy
(b) Type II cytotoxicity
(c) Type III immune complex
(d) Type IV cell mediation

**21.** Consider the following statements about leptospirosis:
1. It is a ubiquitous enzootic disease.
2. Its incubation period ranges from 2 to 20 days.
3. The intensity of jaundice is directly related to prognosis.
4. Urine may show microscopic haematuria.

Which of the statements given above are correct?
(a) 1, 2 and 4
(b) 1, 2 and 3
(c) 1, 3 and 4
(d) 2, 3 and 4

**22.** SVC syndrome can occur in the following except:
(a) Pneumomediastinum
(b) Goitre
(c) Bronchogenic carcinoma
(d) Lymphoma

**23.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Physical Sign)** | | **List II (Medical Condition)** |
|---|---|---|---|
| A. | Koebner phenomenon | 1. | Lepra reaction |
| B. | Erythema nodosum | 2. | Pemphigus vulgaris |
| C. | Erythema multiforme | 3. | Stevens-Johnson syndrome |
| D. | Nikolsky's sign | 4. | Psoriasis |

(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-4 B-1 C-3 D-2

**24.** Which one of the following is the major site of absorption of Vitamin B12?
(a) Stomach
(b) Terminal ileum
(c) Duodenum
(d) Mid Jejunum

**25.** The following features regarding polymyositis are true except:
(a) Progressive proximal muscle involvement
(b) 25% patients may present with dysphagia
(c) Ocular muscle involvement is common
(d) Elevated levels of serum creatine kinase

**26.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Inflammatory Joint Disease)** | | **List II (Clinical Finding)** |
|---|---|---|---|
| A. | Reiter's Syndrome | 1. | Onycholysis |
| B. | Rheumatoid arthritis | 2. | Keratoderma blennorrhagica |
| C. | Psoriatic arthritis | 3. | Xerostomia |
| D. | Sjögren's syndrome | 4. | Baker's cysts |

(a) A-1 B-3 C-2 D-4
(b) A-2 B-4 C-1 D-3
(c) A-4 B-1 C-2 D-3

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(b) Atropine toxicity
(c) Kerosene poisoning
(d) Digitalis toxicity

**47.** The following statements regarding Hodgkin's disease are true except:
(a) It usually presents as painless lymphadenopathy.
(b) The Pel-Ebstein fever is a characteristic feature.
(c) Stage III disease is confined to one side of the diaphragm.
(d) Reed-Sternberg cells are a diagnostic feature.

**48.** Following are causes of bleeding except:
(a) Heparin induced thrombocytopenia
(b) Dengue fever
(c) ITP
(d) Aspirin

**49.** The combination of cyanosis with clubbing can be seen in the following conditions except:
(a) Eisenmenger syndrome
(b) Lung abscess
(c) Chronic bronchitis
(d) Pulmonary AV fistula

**50.** Diagnosis and grading of multi-organ failure is based on all the following criteria except:
(a) Serum bilirubin
(b) Serum albumin
(c) Serum creatinine
(d) $PaO_2/FiO_2$ ratio

**51.** A 16-year old boy presents with exertional dyspnea, haemoptysis and occasionally paroxysmal nocturnal dyspnea. There was history of joint pains five years back. The most probable diagnosis is:
(a) Aortic regurgitation
(b) Mitral stenosis
(c) Tricuspid stenosis
(d) Aortic stenosis

**52.** Consider the following statements:
The Adrenocortical insufficiency may result in
1. Hyponatremia
2. Hypokalemia
3. Acidosis
4. Hyperglycemia
Which of the statements given above is/are correct?
(a) 1 only
(b) 1 and 3
(c) 2 and 4 only
(d) 2, 3 and 4

**53.** Consider the following statements:
Life-threatening pneumococcal infection is a complication seen in
1. Idiopathic thrombocytopaenic purpura
2. Sickle cell disease
3. Thalassemia minor
4. Nephrotic syndrome
Which of the statements given above is/are correct?
(a) 1 only
(b) 1 and 3
(c) 2 and 4 only
(d) 2, 3 and 4

**54.** The following are true regarding Zollinger-Ellison syndrome except:
(a) Common age group is 30 to 50 years
(b) Gastrin level is usually high
(c) Diarrhea can be an associated feature
(d) It occurs in association with MEN-2 syndrome

**55.** The following may be seen in a patient with chronic liver disease except:
(a) Prolonged PT
(b) Prolonged PTT
(c) Thrombocytopenia
(d) Decreased factor VIII

**56.** Pseudomembranous colitis is caused by which of the following organisms?
(a) Shigella
(b) Clostridium difficile
(c) E. coli
(d) Clostridium perfringens

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(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-2 D-4

**76.** With reference to Paediatrics, the following are true of breath holding spells except:
(a) They occur during inspiration
(b) They are involuntary
(c) Cyanosis may not occur
(d) Bradycardia may occur

**77.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Drugs for epilepsy)** | | **List II (Side effects dose-dependent)** |
|---|---|---|---|
| A. | Sodium valproate | 1. | Raised liver enzymes |
| B. | Carbamazepine | 2. | Drowsiness |
| C. | Phenytoin | 3. | Hirsutism |
| D. | Phenobarbitone | 4. | Hyperactivity |

(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-2 D-4

**78.** The confirmatory diagnostic test for thalassemia carrier status is:
(a) Low hemoglobin level
(b) Haemoglobin A2 more than 3.5%
(c) Foetal haemoglobin more than 10%
(d) Positive osmotic fragility test

**79.** A three year old male child has a poor stream of urine and strains at micturition. After voiding, the bladder is still palpable. The patient should be advised
(a) Abdomen X-ray
(b) Urine examination
(c) Circumcision
(d) Excretory urogram

**80.** A two year old child has weight less than 3 SD (less than 3 Z score) as per WHO growth chart and mid upper arm circumference less than 11 cm. What is the correct diagnosis for this child?
(a) Acute malnutrition
(b) Chronic malnutrition
(c) Severe acute malnutrition
(d) Moderate acute malnutrition

**81.** For a three year old male child, the height for age is 82% of the expected for that age and weight for height is 65% of the expected value. The child is labelled as:
(a) Normal
(b) Wasted
(c) Stunted
(d) Wasted and stunted

**82.** For an early infant diagnosis of HIV infection, which of the following tests is used as per national programme?
(a) ELISA (IgG antibody test)
(b) DNA PCR test
(c) p24 antigen test
(d) CD4 count

**83.** A normal three year old baby should be able to do the following tasks except:
(a) Using hands and feet simultaneously
(b) Riding tricycle
(c) Copying a square
(d) Using pair of scissors

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**84.** A seven year old child presents with intermittent claudication, pain and weakness of legs and dyspnea on running. Examination shows delayed and weak femorals compared to brachial arteries. The heart size is normal with a left ventricular forcible apex. The most probable diagnosis is:
(a) Ventricular septal defect
(b) Patent ductus arteriosus
(c) Atrial septal defect
(d) Coarctation of aorta

**67.** Regarding high altitude pulmonary oedema, the following statements are true except:
(a) It can be caused by physical exertion at high altitude
(b) It does not occur in a physically fit person
(c) It occurs due to leak in the alveolar capillary membrane
(d) Portable hyperbaric chamber may be used for the treatment instead of descent to a lower altitude

**68.** Complications of myocardial infarction are all except:
(a) Systemic embolisation
(b) Rupture of interventricular septum
(c) Dissection of aorta
(d) Ventricular fibrillation

**69.** Philadelphia chromosome can be detected by which of the following techniques?
1. FISH
2. PCR
3. Cytogenetics
Select the correct answer using the code given below:
(a) 1 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

**70.** The following statements regarding celiac disease are correct except:
(a) Absence of gastrointestinal symptoms rules out celiac disease
(b) Malabsorption syndrome may be a presenting feature
(c) Duodenal biopsy shows increased intraepithelial lymphocytes
(d) Steroid therapy may induce remission

**71.** A 6 year old child presents with oliguria, haematuria, puffiness of face, convulsions, B.P. of 200/100 mm Hg and blood urea 80 mg%. What is the most likely diagnosis?
(a) Haemolytic uraemic syndrome
(b) Nephrotic syndrome
(c) Acute glomerulonephritis with hypertensive encephalopathy
(d) Obstructive uropathy

**72.** A 3 year old child is brought for sudden inability to walk following fever of two days duration. On clinical examination, sensorium is normal, both the lower limbs are hypotonic with the right limb more affected than the left. Plantar reflex is equivocal and deep tendon reflexes are not eliciable in the lower limbs on both sides. The most probable diagnosis is
(a) Acute poliomyelitis
(b) Acute rheumatic fever
(c) Acute transverse myelitis
(d) Acute infective polyneuritis

**73.** X-ray of the skull in an infant shows periventricular calcification in
(a) Tuberculous meningitis
(b) Cytomegalovirus infection
(c) Japanese B encephalitis
(d) Congenital syphilis

**74.** A 4 year old boy diagnosed as a case of sickle cell disease presents with pain and swelling of bones, marked in small bones of hand and feet along with severe pain in abdomen. Investigation reveals necrosis of femoral head and upper third of tibia. The symptoms have resolved after one week. The possible explanation is:
(a) Aplastic crisis
(b) Sequestration crisis
(c) Vaso-occlusive crisis
(d) Hemolytic crisis

**75.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Genetic disorder)** | | **List II (Genotype)** |
|---|---|---|---|
| A. | Down Syndrome | 1. | 47, XY, +21 |
| B. | Turner Syndrome | 2. | 46, XY |
| C. | Noonan Syndrome | 3. | 46, XX, 5p– |
| D. | Cri-du-chat Syndrome | 4. | 45, XO |

(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3

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**57.** A patient presents with breathlessness and occasional dry cough. On physical examination, he is found to have bilateral basal crepitations. His pulmonary function tests reveal a decrease in total lung capacity and vital capacity, with normal $FEV_1/FVC$ ratio. He is most likely suffering from:
(a) Chronic bronchitis
(b) Idiopathic pulmonary fibrosis
(c) Cystic fibrosis
(d) Allergic bronchopulmonary aspergillosis

**58.** A 45 year old hypertensive male patient presented to the casualty with 3 hour history of sudden onset severe headache associated with nausea and vomiting. On clinical examination, patient had right sided ptosis and neck stiffness. Rest of the neurological examination was normal. The most likely diagnosis in this case is:
(a) Hypertensive brain damage
(b) Migraine
(c) Aneurysmal subarachnoid bleed
(d) Acute pyogenic meningitis

**59.** Which one of the following is not a treatment of hepatic encephalopathy?
(a) Lactulose
(b) Rifaximin
(c) TIPS
(d) Electrolyte supplementation

**60.** Features of intravascular haemolysis are the following except:
(a) Increased LDH
(b) Haemoglobinuria
(c) Increased serum indirect bilirubin
(d) Increased serum haptoglobin

**61.** Consider the following statements:
1. Hypertrophic cardiomyopathy can lead to sudden cardiac death.
2. Dressler's syndrome is an early complication of acute myocardial infarction.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**62.** The common sites of hypertensive bleed are the following except:
(a) Basal ganglion
(b) Pons
(c) Cerebellum
(d) Frontal cortex

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**63.** Hypoglycaemia as an adverse side effect is most commonly seen during the treatment with:
(a) Dipeptidyl peptidase-IV inhibitors
(b) Metformin
(c) α-glucosidase inhibitors
(d) Sulfonylureas

**64.** Which of the following statements is/are correct regarding Gilbert's syndrome?
1. Inheritance of the disease is autosomal dominant.
2. Jaundice becomes very severe with time.
3. Fasting leads to increased bilirubin levels.

Select the correct answer using the code given below:
(a) 1 and 3 only
(b) 1 only
(c) 2 and 3 only
(d) 1, 2 and 3

**65.** The following are causes of secondary hypertension except:
(a) Conn's syndrome
(b) Carcinoid syndrome
(c) Cushing's syndrome
(d) Pheochromocytoma

**66.** Tetrology of Fallot (Fallot's tetrology) is characterised by the following except:
(a) Ventricular septal defect
(b) Overriding aorta
(c) Pulmonary hypertension
(d) Right ventricular hypertrophy

**85.** A seven day old baby presents with complaints of vomiting and diarrhoea. Examination reveals cataract in both the eyes and jaundice. What is the most probable diagnosis?
(a) Rh incompatibility
(b) Galactosemia
(c) Congenital rubella syndrome
(d) Congenital syphilis

**86.** The treatment of choice for Guillain-Barre syndrome is:
(a) Corticosteroids
(b) Intravenous immunoglobulins
(c) Cyclosporins
(d) ACTH

**87.** A two year old child is admitted with history of fever for two weeks and convulsions for the last one day. CSF examination shows CSF pressure elevated to 30-40 cm $H_2O$, clear CSF, lymphocytic pleocytosis (250 cells/$mm^3$), elevated protein and low chloride levels. What is the most probable diagnosis?
(a) Pyogenic meningitis
(b) Tubercular meningitis
(c) Acute encephalitis
(d) Sabacute sclerosing panencephalitis (SSPE)

**88.** Features of Turner syndrome in childhood include the following except:
(a) Webbed neck
(b) Cubitus valgus
(c) Shield chest with widely spaced nipples
(d) Polydactyly

**89.** The following drugs can be used as steroid sparing agents in the treatment of nephrotic syndrome in children except:
(a) Levamisole
(b) Aspirin
(c) Cyclophosphamide
(d) Mycophenolate mofetil

**90.** In childhood acute lymphoblastic leukemia, the following are good prognostic factors except:
(a) Age between 1 and 9 years
(b) Female sex
(c) Leukocyte count less than 50,000/$mm^3$
(d) Hypodiploidy

**91.** Consider the following statements:
1. Biodiversity is normally greater in the lower latitudes as compared to the higher latitudes.
2. Along the mountain gradients, biodiversity is normally greater in the lower altitudes as compared to the higher altitudes.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**92.** There is a growing concern about the melting of Arctic permafrost. Why?
(a) It will result in the increase of methane concentration in atmosphere.
(b) All the countries surrounding North Pole will be permanently submerged.
(c) The temperature of ocean currents will be drastically altered.
(d) The pH of the ocean water will be drastically changed.

**93.** With reference to Pre-Conception and Pre-Natal Diagnostics Techniques (Prohibition of sex selection) Act, 1994, which of the following statements is/are correct?
1. Every offence under this Act is cognizable non-bailable.
2. For the first offence, the penalty for the doctor is 'upto 7 years of imprisonment with a fine up to Rs. 1,00,000.'

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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**36.** On abdominal percussion, liver dullness may be obliterated in the following except:
(a) Fatty liver
(b) Emphysema
(c) Perforated viscus
(d) Fulminant hepatitis

**37.** Consider the following statements regarding Helicobacter pylori:
1. It is a gram negative bacterium
2. It invades the epithelium
3. It produces urease
4. It produces chronic gastritis

Which of the statements given above are correct?
(a) 1, 2 and 4
(b) 1 and 3 only
(c) 2 and 4 only
(d) 1, 3 and 4

**38.** Consider the following conditions:
1. Steroid therapy
2. Hypertriglyceridaemia
3. Hypercalcaemia
4. Azathioprine therapy

Acute pancreatitis may occur in which of the above conditions?
(a) 1, 2 and 3 only
(b) 2 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

**39.** A 60-year old patient presents with gradually increasing dysphagia to solids for 3 months with significant loss of weight. The most probable diagnosis is:
(a) Stricture oesophagus
(b) Carcinoma oesophagus
(c) Reflux oesophagitis
(d) Neurogenic oesophagus

**40.** Consider the following statements:
1. Gentamicin should be added to empirical regime for acute meningitis for patients aged more than 55 years.
2. Ampicillin covers Listeria monocytogenes.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**41.** Which one of the following gases is used for sterilization of pharmaceutical products?
(a) Ethylene oxide
(b) Ammonia
(c) Halothane
(d) Nitrous oxide

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**42.** The following statements about peptic ulcer are true except:
(a) Eradication of H. pylori is a part of medical management.
(b) Duodenal ulcer invariably changes into malignant.
(c) Complications are indication for surgery.
(d) Zollinger-Ellison syndrome is associated with intractable peptic ulceration.

**43.** In a patient with lacerated injury foot who is not actively immunised against tetanus, which one of the following is indicated for tetanus prophylaxis?
(a) Penicillin
(b) Tetanus toxoid
(c) Tetanus immunoglobulin
(d) Triple vaccine

**44.** Which one of the following neoplasms can lead to 'water intoxication'?
(a) Oat cell carcinoma of bronchus
(b) Hepatocarcinoma
(c) Testicular tumours
(d) Rhabdomyosarcoma

**45.** The Swan-Ganz catheter is used to measure:
(a) Peripheral arterial blood pressure
(b) Portal venous pressure
(c) Pulmonary wedge pressure
(d) Intracranial pressure monitoring

**46.** Delirium is usually seen in
(a) Acetaminophen toxicity

**102.** In food processing, which of the following is/are used as emulsifiers?
1. Carboxymethyl cellulose
2. Ethylene diamine tetra acetate
3. Propylene glycol

Select the correct answer using the code given below:
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**103.** To test the adulteration of milk, 3 ml of milk is boiled, then cooled to room temperature; and two or three drops of iodine solution is added. The milk turned blue. This indicates that the milk is adulterated with:
(a) Sodium bicarbonate
(b) Glucose
(c) Starch
(d) Urea

**104.** With reference to food preservation, which of the following statements is/are correct?
1. Pasteurization means the heating of a food product to a sufficiently high temperature to kill all the microorganisms present in it.
2. In the case of food preservation by sterilization by heat, foods high in acid are very easily sterilized as compared to those low in acid.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**105.** Consider the following statements:
1. Pasteurization by heat is used in the processing of fruit juices.
2. Water glass is used in the preservation of eggs.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**106.** With reference to irradiation for food processing, which of the following statements is/are correct?
1. Cobalt-60 produces ionizing radiation, therefore it is used in the process of irradiation of food.
2. Ultra-violet rays are the only ionizing radiation used for irradiation of food.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**107.** Among the following pairs of States, in India, major deposits of bauxite are concentrated in:
(a) Jharkhand and Odisha
(b) Assam and West Bengal
(c) Bihar and Haryana
(d) Punjab and Rajasthan

**108.** Doha Development Agenda, sometimes seen in news, refers to the affairs of:
(a) UNFCCC
(b) UNCTAD
(c) UNDP
(d) WTO

**109.** With reference to 'monosodium glutamate' (MSG) used in processed foods, which of the following statements is/are correct?
1. MSG is not a naturally occurring substance.
2. MSG is a neurotransmitter.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**110.** In the parliamentary form of government, the
(a) executive is responsible to the legislature
(b) legislature is responsible to the executive
(c) judiciary is responsible to the executive
(d) legislature is responsible to the judiciary

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creatinine or urine output (for renal function), and $PaO_2/FiO_2$ ratio (for respiratory function). Serum albumin, while it may reflect chronic nutritional status or liver synthetic function, does not rapidly change and is not a standard component for acute multi-organ failure scoring or grading.

**51.** (b) Mitral stenosis

A classic sequel of rheumatic heart disease (often following migratory polyarthritis) is mitral valve stenosis. Patients typically present years later with exertional dyspnea, orthopnea or PND, and sometimes hemoptysis due to elevated pulmonary venous pressures. The history of joint pains five years ago likely indicates rheumatic fever, which commonly affects the mitral valve. Aortic regurgitation or stenosis can also occur in rheumatic heart disease but more commonly in conjunction with mitral involvement.

**52.** (b) 1 and 3

Primary adrenal insufficiency (Addison's disease) typically causes hyponatremia, hyperkalemia (not hypokalemia), metabolic acidosis, and low blood glucose (not hyperglycemia) due to cortisol and often aldosterone deficiency. Therefore, only statements 1 (hyponatremia) and 3 (acidosis) are correct in the above list.

**53.** (c) 2 and 4 only

Patients with sickle cell disease are prone to functional asplenia, greatly increasing their risk for severe pneumococcal infections. Those with nephrotic syndrome lose immunoglobulins and complement factors in the urine, which also predisposes them to severe pneumococcal infections. Thalassemia minor generally does not cause severe immune compromise, and ITP alone does not automatically predispose to overwhelming sepsis unless postsplenectomy. Hence only (2) sickle cell disease and (4) nephrotic syndrome apply.

**54.** (d) It occurs in association with MEN-2 syndrome

Zollinger-Ellison syndrome (ZES) involves a gastrin-secreting tumor (gastrinoma) leading to high gastrin levels, often causing multiple or refractory peptic ulcers and frequent diarrhea. It commonly presents in the 30–50 age range. ZES is classically associated with Multiple Endocrine Neoplasia type 1 (MEN-1), not MEN-2. Thus, statement (d) is the incorrect one.

**55.** (d) Decreased factor VIII

Chronic liver disease impairs synthesis of most clotting factors, prolonging PT and PTT, and can also lead to splenomegaly with thrombocytopenia. Factor VIII, however, is unique because it is produced primarily by endothelial cells rather than only by hepatocytes. In chronic liver disease, factor VIII levels are usually normal or even elevated. Consequently, decreased factor VIII is not typical of chronic liver disease.

**56.** (b) Clostridium difficile

Pseudomembranous colitis is most commonly associated with Clostridium difficile infection, often arising after antibiotic therapy (e.g., clindamycin) disrupts normal bowel flora. C. difficile produces toxins causing colonic mucosal inflammation, leading to pseudomembranes visible on endoscopy. Shigella, E. coli, and Clostridium perfringens can cause diarrheal syndromes but are not the usual cause of pseudomembranous colitis.

**57.** (b) Idiopathic pulmonary fibrosis

Idiopathic pulmonary fibrosis is a prototypical restrictive lung disease marked by decreased total lung capacity (TLC) and vital capacity (VC), but a near-normal or increased $FEV_1/FVC$ ratio. The bilateral basal crackles ("Velcro crackles") are also classic. Chronic bronchitis and cystic fibrosis typically cause obstructive patterns (reduced ratio). Allergic bronchopulmonary aspergillosis presents with episodic wheezing and bronchiectasis rather than a classic restrictive profile.

**58.** (c) Aneurysmal subarachnoid bleed

A "thunderclap" headache (very severe, sudden onset) plus neck stiffness strongly suggests subarachnoid hemorrhage (SAH). A ptosis, particularly if combined with partial third-

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**119.** The quantity of water required to produce 1 kg of which of the following foods is largest?
(a) Barley
(b) Mutton
(c) Potato
(d) Wheat

**120.** What is 'CRISPR-Cas9' sometimes seen in the news?
(a) A targetted genome editing technique
(b) A cancer causing gene
(c) A robotic surgical procedure
(d) A technique of two-dimensional electrophoresis

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point strongly to acute left ventricular failure with pulmonary edema. The patient's sudden dyspnea, high blood pressure, and restlessness further support acute cardiac decompensation rather than an obstructive pulmonary disease (COPD or asthma). Pneumothorax typically presents with diminished breath sounds on one side and no S3 gallop.

**35.** (a) 1, 2 and 3

Small cell lung cancer is notorious for paraneoplastic syndromes: ectopic ACTH secretion (causing Cushing's), Lambert-Eaton myasthenic syndrome, and SIADH. Addison's disease (primary adrenal insufficiency) is not commonly linked to small cell lung cancer. Hence 1, 2, and 3 are correct.

**36.** (a) Fatty liver

Liver dullness on percussion can disappear if air gets interposed or if the liver is greatly shrunken. Emphysema (hyperinflated lungs) can lower or obscure liver dullness. A perforated viscus can introduce free air under the diaphragm, also obliterating dullness. Fulminant hepatic failure may lead to hepatic shrinkage and uncertain percussion findings. Fatty liver, however, typically enlarges or maintains the liver's normal span and does not obliterate dullness, making it the exception.

**37.** (d) 1, 3 and 4

Helicobacter pylori is a gram-negative organism (1) that colonizes the gastric mucosa and is known for producing urease (3). It causes chronic gastritis (4), which can progress to peptic ulcer disease. However, H. pylori typically remains superficial rather than truly "invading" the gastric epithelium; hence statement 2 is inaccurate.

**38.** (d) 1, 2, 3 and 4

Multiple factors can trigger acute pancreatitis. Corticosteroids (1) have been implicated in some cases. Hypertriglyceridemia (2) is a well-known cause (often TG >1000 mg/dL). Severe hypercalcemia (3) can activate pancreatic enzymes prematurely. Azathioprine (4) is also recognized to cause drug-induced pancreatitis. Hence, all four are possible precipitants.

**39.** (b) Carcinoma oesophagus

Progressive dysphagia to solids together with significant weight loss in an older patient is highly suggestive of esophageal malignancy, most frequently squamous cell or adenocarcinoma. Such patients often report that initially only solid foods cause difficulty, which gradually worsens until even liquids may become problematic. Benign strictures typically have a longer history, and reflux esophagitis or neurogenic causes follow different clinical patterns. The rapid onset (3 months) and prominent weight loss point strongly toward a malignant process.

**40.** (b) 2 only

In acute bacterial meningitis for older adults (often >50 years), it is recommended to include ampicillin to cover Listeria monocytogenes. While gentamicin can sometimes be added for synergy in neonatal or severely immunocompromised patients with Listeria, it is not routinely required solely on the basis of being older than 55. Therefore, statement 1 is not a standard guideline, but statement 2 is universally accepted (ampicillin indeed covers Listeria).

**41.** (a) Ethylene oxide

Ethylene oxide (EtO) gas is commonly used for cold sterilization of heat-sensitive medical devices and pharmaceutical materials. It destroys microorganisms, including spores, at relatively low temperatures without damaging equipment and materials that might be harmed by high-heat or moisture-based sterilization. Ammonia, halothane, and nitrous oxide have other industrial or anesthetic uses but are not used for sterilizing pharmaceutical or medical products.

**42.** (b) Duodenal ulcer invariably changes into malignant

Helicobacter pylori eradication is a cornerstone of peptic ulcer management (a). Persistent or complicated ulcers may warrant surgical

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anion-gap acidosis because the main problem is tubular defect in acid handling rather than an excess of new organic acids.

8. (d) Hepato-renal syndrome

Hepatorenal syndrome is characterized by severe vasoconstriction of the renal arteries in advanced liver disease. Patients present with a normal urinary sediment, very low urinary sodium (<10 mEq/L), and progressive renal failure despite no intrinsic kidney damage. Interstitial nephritis, acute tubular necrosis, and glomerulonephritis usually present with urinary abnormalities (casts, higher urinary sodium). The extremely low urinary sodium (5 mEq/L) and absence of active sediment strongly suggest hepatorenal syndrome.

9. (b) Measles virus

Subacute sclerosing panencephalitis (SSPE) is a progressive and fatal neurological disorder that typically appears years after an initial measles infection—due to a persistent, mutated measles virus. It involves gradual behavioral changes, mental deterioration, and neurological deficits. The other viruses listed (HIV, Japanese B encephalitis virus, JC virus) are not implicated in SSPE.

10. (d) 1, 3 and 4

Parkinsonism commonly presents with bradykinesia, rigidity, and a loss of associated movements, such as failing to swing the arms while walking. Cogwheel rigidity and festinant (shuffling, hurried) gait are also hallmarks. Nystagmus is not a typical manifestation of Parkinson's disease. Hence, items 1 (failure to swing arms), 3 (cogwheel rigidity), and 4 (festinant gait) characterize Parkinsonism.

11. (b) 1, 2 and 4

A right homonymous hemianopia is caused by damage to the left side of the visual pathway beyond the optic chiasma. This includes the left optic tract (1), the left lateral geniculate body (4), and the left optic radiations (2). Lesions in the optic chiasma typically produce bitemporal hemianopia, not homonymous defects. Therefore, 1, 2, and 4 is correct.

12. (d) Multiple myeloma

Alkaline phosphatase (ALP) elevates in conditions with increased osteoblastic activity (e.g., osteomalacia, hyperparathyroidism) or cholestasis (obstructive jaundice). In multiple myeloma, lesions are predominantly osteolytic with minimal osteoblastic response, so serum ALP remains normal or only mildly elevated. Hence, multiple myeloma is the condition listed that typically does not produce a high ALP.

13. (c) 1, 2 and 4

Acromegaly often features fibroma molluscum (skin tags) and acanthosis nigricans (1), while TRH abnormally stimulating growth hormone release (2) occurs in many acromegalic patients. Around 25% may develop diabetes mellitus (4) due to insulin resistance. True "acroosteolysis" is not typically described as a common finding; radiographs more often show "spade-like" hands rather than marked osteolysis. Hence, statements 1, 2, and 4 are correct.

14. (a) Betablocker

Hypomagnesemia arises from conditions that impair absorption or increase renal excretion of magnesium, including chronic pancreatic insufficiency (malabsorption), poorly controlled diabetes mellitus (osmotic diuresis), and alcoholism (nutritional deficiency). Beta-blockers do not typically cause significant urinary magnesium loss or malabsorption, making them the exception among the listed options.

15. (b) 1, 2 and 3

Secondary diabetes occurs from diseases that alter insulin secretion or increase insulin resistance. Thyrotoxicosis, pheochromocytoma, and acromegaly can elevate glucose via excess hormones. Hemochromatosis ("bronze diabetes") damages pancreatic islets by iron deposition. Pancreatic carcinoma can destroy insulin-producing cells. Thus, 1, 2, and 3 are all recognized causes of secondary diabetes.

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# PAPER 2016 ANSWERS

1. (c) Intravenous administration of atropine sulfate

In acute inferior wall myocardial infarction, marked bradycardia (heart rate 40/min) and hypotension often reflect excessive vagal tone or AV nodal involvement. The initial step is intravenous atropine, which blocks vagal influence on the heart, thereby improving heart rate and blood pressure. If atropine fails, temporary pacing may be needed. Normal saline bolus is more specific if right ventricle involvement is confirmed, while isoprenaline infusion is rarely first-line. Thus, atropine is the most appropriate immediate management.

2. (d) Obliteration of the 'x' descent and prominent 'CV' wave

In tricuspid regurgitation, systolic backflow from the right ventricle into the right atrium causes a prominent "v" or "CV" wave and obliterates the normal "x" descent in the jugular venous pulse. Prominent "a" waves occur with resistant right ventricular filling (e.g., pulmonary hypertension), while cannon waves are seen with AV dissociation. Exaggerated "x" and "y" descents are typical in constrictive pericarditis. Thus, the hallmark of tricuspid insufficiency is a prominent "CV" wave with loss of the "x" descent.

3. (a) A-4 B-1 C-2 D-3

Osler's nodes—painful nodules on fingers/toes—are classically linked with subacute bacterial endocarditis (4). Differential cyanosis (lower limbs more cyanosed than upper limbs) occurs when a patent ductus arteriosus reverses (Eisenmenger's) (1). A bisferiens pulse (double-peaked pulse) is associated with combined aortic stenosis and regurgitation (2). Graham Steell murmur is a high-pitched early diastolic murmur best heard along the left sternal border in pulmonary hypertension (3). Hence, the correct matches are A-4, B-1, C-2, D-3.

4. (a) Infective endocarditis

Acute aortic regurgitation most often stems from sudden damage to the aortic valve leaflets or supporting structures. Infective endocarditis can rapidly destroy valves, causing abrupt regurgitation and dramatic hemodynamic compromise. Ankylosing spondylitis, Marfan's syndrome, and rheumatoid arthritis more typically produce a chronic process that gradually affects the valve over time. Thus, among the listed options, infective endocarditis is the prime cause of acute aortic regurgitation.

5. (d) Dressler's syndrome

Early complications of myocardial infarction typically occur within days of the event. These include papillary muscle dysfunction (leading to mitral regurgitation), ventricular septal rupture, and free wall rupture. Dressler's syndrome, however, is a late autoimmune-mediated pericarditis, manifesting weeks to months following the infarction. As such, it is not an early complication.

6. (c) Fibrinogen

Nephrotic syndrome results in heavy proteinuria and loss of many low molecular weight proteins (e.g., albumin, transferrin, ceruloplasmin). Fibrinogen is a large protein and an acute-phase reactant; its hepatic synthesis often increases during inflammation or stress. As a result, fibrinogen levels are typically maintained or even elevated and do not significantly drop in nephrotic syndrome, unlike albumin or transferrin.

7. (a) Renal tubular acidosis

High anion-gap metabolic acidosis arises when unmeasured anions (e.g., ketoacids, lactate, or retained phosphates/sulfates in renal failure) accumulate in the blood. Acute and chronic renal failure and diabetic ketoacidosis all produce an elevated anion gap. Renal tubular acidosis typically causes a normal (hyperchloremic)

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Polymyositis typically causes symmetrical, progressive proximal muscle weakness (e.g. hips, shoulders). About a quarter of patients may experience dysphagia due to involvement of striated muscles in the esophagus. Serum creatine kinase (CK) is frequently elevated. Importantly, unlike myasthenia gravis or certain muscular dystrophies, ocular muscle involvement (ptosis or diplopia) is not characteristic of polymyositis, making option (c) the false statement.

**26.** (b) A-2 B-4 C-1 D-3

Reiter's (reactive) arthritis frequently presents with keratoderma blennorrhagica on the palms/soles (A→2). Rheumatoid arthritis is associated with Baker's cysts (B→4). Psoriatic arthritis typically involves nail changes like onycholysis (C→1). Sjögren's syndrome causes dryness of mucous membranes, including the mouth (xerostomia) (D→3).

**27.** (a) Resperidone

Generalized anxiety disorder (GAD) is commonly treated with antidepressants (SSRIs, SNRIs such as venlafaxine), buspirone (particularly for chronic anxiety), and sometimes low-dose tricyclics (e.g., amitriptyline) if other options fail. Risperidone is an atypical antipsychotic generally reserved for psychotic disorders or severe refractory states; it is not a standard therapy for routine GAD. Hence, risperidone is the exception.

**28.** (b) Bradycardia

SIRS criteria include abnormal temperature (fever >38°C or hypothermia <36°C), heart rate >90 bpm (i.e., tachycardia), tachypnea (>20 breaths/min or low $PaCO_2$), and altered WBC count (either leukocytosis >12000 or leukopenia <4000). Bradycardia is not part of SIRS and is generally not expected in systemic inflammatory states.

**29.** (c) Hyperglycaemia

Severe malaria, especially from Plasmodium falciparum, can cause acute respiratory distress syndrome (ARDS), lactic acidosis, cerebral malaria (leading to coma), hypoglycemia, and various organ failures. Hyperglycemia is not typically seen as a direct complication; in fact, hypoglycemia (often exacerbated by quinine) is much more common.

**30.** (b) Chronic kidney failure

Chronic kidney failure often leads to persistently elevated cardiac troponin levels even without an acute myocardial infarction. Decreased clearance and low-level cardiac injury can explain this rise. In muscular dystrophy, acute liver failure, or epilepsy, cardiac troponin is not characteristically elevated unless there is concurrent myocardial injury.

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**31.** (b) 2, 3 and 4

In COPD, air trapping and loss of elastic recoil lead to hyperinflation of the lungs: Functional residual capacity (FRC) and residual volume (RV) both increase, and so does the RV/TLC ratio. The total lung capacity (TLC) may be normal or increased, but not typically reduced. Hence, statements 2, 3, and 4 are correct.

**32.** (d) 1, 2, 3 and 4

Acute respiratory distress syndrome (ARDS) typically develops secondary to severe systemic or pulmonary insults such as sepsis (including Gram-negative), aspiration of gastric contents, acute pancreatitis, or severe trauma/burns. Myocarditis itself does not typically cause ARDS, although severe cardiac failure can lead to pulmonary edema, which is a separate process.

**33.** (a) Hyperpyrexia

Botulism results from a neurotoxin that blocks acetylcholine release, causing a descending paralysis. Characteristic findings include cranial nerve palsies (e.g., blurred vision, dysphagia), sudden or progressive limb weakness, and respiratory failure. Fever or "hyperpyrexia" is generally absent in botulism unless a secondary infection occurs. Hence, option (a) is not a typical feature.

**34.** (b) Acute LVF

Bilateral rhonchi (sometimes "cardiac asthma") plus crackles (crepitations) and an S3 gallop

**16.** (c) Both 1 and 2

The "danger triangle" of the face (including the nose and upper lip) drains into the cavernous sinus via valveless veins. Infections or boils in this region risk retrograde spread to the cavernous sinus, causing thrombosis, a life-threatening condition. Therefore, prompt antibiotic therapy for nasal boils/suppurative lesions is crucial to prevent this complication. Both statements are correct.

**17.** (b) Tall P-wave

ECG signs of hyperkalemia include tall, peaked T waves, prolonged PR intervals, flattened or absent P waves, and widened QRS complexes as potassium levels rise. A "tall P-wave" is not characteristic; instead, P waves are usually diminished. Hence, a tall P-wave does not belong among hyperkalemic ECG changes.

**18.** (c) p24 antigen detection

During the window period, antibodies to HIV (detected by ELISA or Western blot) have not yet formed in sufficient quantity. The p24 antigen, a viral capsid protein, becomes detectable earlier, making p24 antigen assays more likely to identify acute HIV infection before seroconversion. CD4 counts can still be normal early on, so p24 antigen detection is most sensitive in this phase.

**19.** (b) 2, 3 and 4

Tuberculoid leprosy is the paucibacillary form with strong cell-mediated immunity. It presents with few, well-demarcated hypopigmented lesions (2), significant early nerve involvement (3), and a tendency toward spontaneous resolution (4). Type 2 lepra reaction (erythema nodosum leprosum) is more associated with borderline or lepromatous forms, not tuberculoid.

**20.** (b) Type II cytotoxicity

Goodpasture's syndrome involves autoantibodies directed against the glomerular and alveolar basement membranes, causing both renal and pulmonary pathology. This corresponds to a Type II hypersensitivity (cytotoxic) reaction, where antibodies bind directly to antigens on cell surfaces or extracellular matrix, resulting in complement activation and tissue injury.

**21.** (a) 1, 2 and 4

Leptospirosis is found worldwide (thus "ubiquitous enzootic") and typically has an incubation period of 2 to 20 days. Renal involvement often leads to microscopic haematuria. However, a classic teaching is that the intensity of jaundice in leptospirosis (Weil's disease) does not strictly predict prognosis; deeply jaundiced patients can still have a relatively favorable outcome. Hence statements 1, 2, and 4 are correct, while 3 is not.

**22.** (a) Pneumomediastinum

Superior vena cava (SVC) syndrome is most commonly due to tumors or masses compressing or invading the SVC in the mediastinum—classically bronchogenic carcinoma or lymphoma. A significantly enlarged (retrosternal) goitre can also compress the SVC. Pneumomediastinum involves air in the mediastinum, but it typically does not compress the SVC enough to cause SVC syndrome. Thus, pneumomediastinum is the exception.

**23.** (d) A-4 B-1 C-3 D-2

Koebner phenomenon (A) describes the appearance of new lesions along lines of trauma and is classic in psoriasis (4). Erythema nodosum (B) may occur in Type 2 lepra reaction (1). Erythema multiforme (C) is closely related to Stevens-Johnson syndrome (3). Nikolsky's sign (D) is positive in conditions like pemphigus vulgaris (2), where slight skin pressure dislodges the epidermis.

**24.** (b) Terminal ileum

Vitamin B12 (cobalamin) is bound to intrinsic factor secreted by gastric parietal cells. After passing through the stomach and small bowel, the B12–intrinsic factor complex is absorbed predominantly in the terminal ileum. The stomach and duodenum are not the principal sites of cobalamin absorption.

**25.** (c) Ocular muscle involvement is common

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intervention (c). Zollinger-Ellison syndrome (gastrinoma) is linked to severe, often refractory ulcers (d). However, duodenal ulcers rarely become malignant (in contrast to some gastric ulcers which can be malignant). Hence, the statement that a duodenal ulcer "invariably" changes into malignant disease is false.

**43.** (c) Tetanus immunoglobulin

For an individual with a dirty/contaminated wound who is inadequately immunized (or whose tetanus vaccination status is unknown), the recommended prophylaxis is both active immunization (tetanus toxoid) and passive immunization with Tetanus Immunoglobulin (TIG). However, if only one agent must be chosen for immediate antibody coverage, TIG confers rapid protection. Tetanus toxoid alone will not offer prompt immunity, and penicillin or triple vaccine do not address acute tetanus prophylaxis in a high-risk, unimmunized scenario.

**44.** (a) Oat cell carcinoma of bronchus

Small cell (oat cell) carcinoma of the lung is well known for producing ectopic ADH (antidiuretic hormone), which can lead to the syndrome of inappropriate ADH secretion (SIADH). This causes water retention, hyponatremia, and can manifest as "water intoxication." Hepatocarcinoma, testicular tumors, or rhabdomyosarcoma are far less commonly associated with SIADH.

**45.** (c) Pulmonary wedge pressure

A Swan-Ganz catheter (pulmonary artery catheter) is inserted via a large vein into the right side of the heart and advanced into the pulmonary artery. Inflating the balloon at its tip allows measurement of the pulmonary capillary wedge pressure (PCWP), which reflects left atrial pressure in most situations. It does not measure peripheral arterial, portal venous, or intracranial pressures.

**46.** (b) Atropine toxicity

Atropine (an anticholinergic agent) commonly causes central nervous system manifestations such as confusion, agitation, and delirium ("mad as a hatter"), alongside dry mouth, dilated pupils, and tachycardia. While digitalis toxicity can cause confusion, it more characteristically presents with visual changes and gastrointestinal upset; acetaminophen causes primarily hepatic injury; and kerosene poisoning leads to respiratory and GI effects rather than a classic delirium.

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**47.** (c) Stage III disease is confined to one side of the diaphragm

Hodgkin's lymphoma typically presents with painless lymphadenopathy (a). A cyclical fever pattern (Pel-Ebstein fever) can be a classic clinical feature (b). Reed-Sternberg cells, large binucleate cells, are pathognomonic for Hodgkin's (d). Stage III disease indicates lymph node involvement on both sides of the diaphragm. Hence, stating it is "confined to one side" is incorrect for Stage III.

**48.** (a) Heparin induced thrombocytopenia

Heparin-induced thrombocytopenia (HIT) paradoxically increases the risk of thrombosis, rather than bleeding, despite a drop in platelet count. Dengue fever can cause severe thrombocytopenia and bleeding, immune thrombocytopenic purpura (ITP) obviously leads to bleeding because of low platelets, and aspirin impairs platelet function, increasing bleeding tendency. Therefore, HIT is the least likely among these to present as a straightforward cause of bleeding.

**49.** (c) Chronic bronchitis

Cyanosis with clubbing typically occurs in congenital cyanotic heart diseases (like Eisenmenger syndrome), suppurative lung diseases (like lung abscess or bronchiectasis), and right-to-left shunt conditions (e.g., pulmonary AV fistula). Although chronic bronchitis can produce cyanosis ("blue bloater"), it generally does not cause significant clubbing. Thus, (c) is the correct exception.

**50.** (b) Serum albumin

Multiple organ dysfunction scoring systems (like SOFA) typically assess acute changes in parameters such as bilirubin (for liver function),

**111.** The term 'Ramsar Convention', sometimes seen in news, refers to:
(a) conservation of forests
(b) conservation of wetlands
(c) reduction of greenhouse gas emissions
(d) controlling wildlife trafficking

**112.** In India, who heads the National Disaster Management Authority?
(a) Prime Minister
(b) Union Minister for Home Affairs
(c) Cabinet Secretary
(d) Secretary, Union Ministry of Environment, Forests and Climate Change

**113.** Natural gas is used for the production of which of the following?
1. Detergents and soaps
2. Electricity
3. Fertilizers for crops
Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 2 and 3 only
(c) 2 only
(d) 3 only

**114.** Which of the following parts of the human body can be used as a sample/samples for the presence of mercury?
1. Blood
2. Hair
3. Nail
Select the correct answer using the code given below:
(a) 1 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3

**115.** Which of the following is/are known as 'ozone depleting substance(s)'?
1. Black carbon
2. Halons
3. Oxides of nitrogen
Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

**116.** Consider the following statements:
1. All organochlorine pesticides (OCPs) enter the human bodies through food chain only.
2. Some of the OCPs are categorized as Persistent Organic Pollutants.
Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**117.** With reference to mercury pollution, which of the following statements are correct?
1. Once released into environment, mercury can turn into methyl mercury.
2. Mercury can enter the human body through inhalation.
3. As regards the entry and accumulation of mercury in humans, contaminated fish is an important source.
Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**118.** Consider the following statements:
1. In India, the executive power of a State is vested in its Chief Minister.
2. Union Territories are administered by the President of India through an Administrator appointed by him.
Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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nerve involvement, may point to a posterior communicating artery aneurysm that has bled. Hypertensive hemorrhages often present with focal deficits in deep brain structures, whereas pyogenic meningitis typically develops more gradually with fever. Migraine seldom causes neck stiffness or acute ptosis.

**59.** (c) TIPS

Hepatic encephalopathy management commonly includes lactulose (to reduce ammonia absorption), non-absorbable antibiotics like rifaximin, and correction of electrolyte imbalances. By contrast, transjugular intrahepatic portosystemic shunt (TIPS) actually can worsen encephalopathy because it diverts blood flow away from the liver, reducing hepatic clearance of toxins. Hence TIPS is not used to treat encephalopathy, though it may be indicated for refractory variceal bleeding.

**60.** (d) Increased serum haptoglobin

In intravascular hemolysis, red cells rupture within the bloodstream, releasing hemoglobin. Typical findings include elevated lactate dehydrogenase (LDH), hemoglobinuria (due to hemoglobin free in the plasma and filtered by kidneys), and increased unconjugated bilirubin (from heme breakdown). Serum haptoglobin (which binds free hemoglobin) becomes depleted, thus levels fall rather than rise.

**61.** (a) 1 only

Hypertrophic cardiomyopathy is known for causing dynamic outflow obstruction and lethal arrhythmias, often leading to sudden cardiac death in otherwise apparently healthy individuals (particularly young athletes). Dressler's syndrome, however, is a late post-infarction pericarditis that occurs weeks to months after the myocardial infarction, not an early complication.

**62.** (d) Frontal cortex

Chronic hypertension predisposes to Charcot-Bouchard microaneurysms in small penetrating arteries, leading to intracerebral hemorrhages typically in the basal ganglia (particularly the putamen), thalamus, pons, or cerebellum. A primary intracerebral hemorrhage solely in the frontal cortex is less characteristic of hypertensive hemorrhage.

**63.** (d) Sulfonylureas

Among standard oral hypoglycemic agents, sulfonylureas (e.g., glimepiride, glibenclamide) are notorious for causing hypoglycemia because they increase insulin release irrespective of plasma glucose levels. If meals are delayed or if an excessive dose is taken, blood sugar can drop sharply. In contrast, metformin, α-glucosidase inhibitors (acarbose), and DPP-4 inhibitors (sitagliptin) rarely cause true hypoglycemia when used alone because their primary mechanisms involve reducing hepatic glucose output or delaying carbohydrate digestion.

**64.** (a) 1 and 3 only

Gilbert's syndrome is an autosomal dominant disorder of mildly reduced activity of the bilirubin-conjugating enzyme (UGT1A1). It leads to mild unconjugated hyperbilirubinemia, often precipitated by fasting, stress, or illness. Despite lifelong mild jaundice, it does not become "very severe" over time, and most patients remain asymptomatic apart from occasional mild icterus. Hence statements 1 (autosomal dominant inheritance) and 3 (fasting precipitates higher bilirubin) are correct, while severe jaundice is not typical.

**65.** (b) Carcinoid syndrome

Secondary hypertension arises from identifiable pathophysiologic causes such as Conn's syndrome (primary hyperaldosteronism), Cushing's syndrome (excess cortisol), and pheochromocytoma (excess catecholamines). These all elevate blood pressure. Carcinoid syndrome (flushing, diarrhea, bronchospasm) can affect the heart (especially right-sided valves) but is not a classic cause of persistently high blood pressure. Hence it is the exception among these listed conditions.

**66.** (c) Pulmonary hypertension

Tetralogy of Fallot classically includes: (1) Ventricular septal defect (VSD), (2) Overriding aorta (straddling the VSD), (3) Right ventricular

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# QUESTION PAPER 2015

**1.** The following statements in relation to right ventricular myocardial infarction are correct except:
(a) It may occur along with inferior wall myocardial infarction
(b) The ECG shows segment elevation in right precordial leads
(c) Prognosis in right ventricular infarction is worse than the left ventricular myocardial infarction
(d) The treatment includes intravenous diltiazem

**2.** Atrial myxoma is associated with the following except:
(a) Fever
(b) Weight loss
(c) Systolic murmur at apex
(d) Subungual splinter haemorrhage

**3.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Auscultatory findings)** | | **List II (Cardiac condition)** |
|---|---|---|---|
| A. | Wide fixed split in the second heart sound hypertension | 1. | Pulmonary hypertension |
| B. | Continuous machinery murmur | 2. | Atrial septal defect |
| C. | Muffled heart sounds | 3. | Patent ductus arteriosus |
| D. | Wide variable split in the second heart sound | 4. | Pericardial effusion |

(a) A-1 B-3 C-2 D-4
(b) A-2 B-3 C-4 D-1
(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-2 D-4

**4.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Emergency drugs)** | | **List II (Clinical condition)** |
|---|---|---|---|
| A. | Amiodarone | 1. | A-V Block, mobitz type II |
| B. | Adenosine | 2. | Atrial fibrillation |
| C. | Digoxin | 3. | Ventricular tachycardia |
| D. | Atropine | 4. | Paroxysmal supraventricular tachycardia |

(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-3 B-4 C-2 D-1

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**5.** Klebsiella pneumonia has the following characteristics except:
(a) Upper lobes are frequently involved
(b) Pneumatocele may occur commonly
(c) Empyema is much more common
(d) Lung abscess formation is very uncommon

**6.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Disease)** | | **List II (Antigen leading to hypersensitivity pneumonitis)** |
|---|---|---|---|
| A. | Bagassosis | 1. | Oak, Cedar, Pine dust |
| B. | Byssinosis | 2. | Moldy hay |
| C. | Farmer's lung | 3. | Cotton |
| D. | Wood worker's lung | 4. | Sugarcane dust |

(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-3 C-2 D-1
(d) A-3 B-4 C-2 D-1

of periventricular calcification strongly suggests CMV.

**74.** (c) Vaso-occlusive crisis

Sickle cell vaso-occlusive crises produce ischemia, infarction, and pain in bones and joints. Hand-foot syndrome (dactylitis), femoral head necrosis, and acute abdominal pain from visceral infarction are classic. These episodes can spontaneously resolve within days to a week. An aplastic crisis (often parvovirus B19) causes severe anemia and reticulocytopenia. Sequestration crisis involves pooling of blood in the spleen or liver. Hemolytic crisis is abrupt hemolysis with a sharp drop in hemoglobin, not primarily bone pain.

**75.** (B) A-1 B-4 C-2 D-3

Down syndrome corresponds to trisomy 21: 47, XY, +21 (A→1). Turner syndrome is a single X chromosome, or 45, XO (B→4). Noonan syndrome generally has a normal karyotype (46, XY or 46, XX), so matching "2. 46, XY" is used here (C→2). Cri-du-chat results from deletion of the short arm of chromosome 5: 46, XX, 5p– (D→3). Thus, (a) correctly matches A1, B4, C2, D3.

**76.** (a) They occur during inspiration

Breath-holding spells in toddlers typically happen after a forceful expiration triggered by crying or frustration; they are not initiated during inspiration. They are involuntary reflex events, can be associated with cyanosis (or pallor), and can cause bradycardia due to vagal stimulation. Because they follow a crying-out (expiratory) phase, option (a) is incorrect.

**77.** (B) A-1 B-4 C-2 D-3

Sodium valproate commonly raises liver enzymes (A→1). Carbamazepine often causes sedation or drowsiness (B→4). Phenytoin is well-known for dose-related hirsutism and gum hypertrophy (C→2). Phenobarbitone frequently causes sedation but can also paradoxically induce hyperactivity in some children (D→3). Thus, (a) correctly pairs A→1, B→4, C→2, D→3.

**78.** (b) Haemoglobin A2 more than 3.5%

Beta-thalassemia trait (carrier status) is characterized by an elevated $HbA_2$ fraction (>3.5%) on hemoglobin electrophoresis. A low hemoglobin level alone is not specific, and fetal hemoglobin (HbF) can rise modestly but typically not above 10% in trait carriers. Osmotic fragility test is associated more with hereditary spherocytosis. Thus, an elevated $HbA_2$ best confirms beta-thalassemia minor.

**79.** (d) Excretory urogram

In a young boy with obstructive urinary symptoms (poor stream, incomplete emptying, palpable bladder), a structural lesion such as posterior urethral valves is strongly suspected. An excretory urogram (IVU) or a voiding cystourethrogram (commonly done) can visualize the outflow obstruction. Abdominal X-ray or routine urine testing will not definitively identify anatomical causes. Circumcision only helps if phimosis is the culprit, but with a palpable post-void bladder, deeper obstruction is likely.

**80.** (c) Severe acute malnutrition

According to WHO criteria, severe acute malnutrition (SAM) includes weight-for-height < –3 SD (or below 3 Z scores) and/or a mid upper arm circumference (MUAC) <11.5 cm (some references say <11.5 cm). This child meets both very low weight-for-age/height criteria and has MUAC <11 cm, placing him in the severe acute malnutrition category.

**81.** (b) Wasted

Wasting reflects low weight-for-height. Here, weight-for-height at 65% is clearly below normal. Stunting is typically defined as height-for-age under about 80% or < –2 SD. Many classifications use 80% as a cutoff, but in this question, 82% is considered above the stunting threshold. Hence the child's main issue is low weight-for-height (wasting), not significant stunting.

**82.** (b) DNA PCR test

In children under 18 months, maternal IgG antibodies can cross the placenta, rendering antibody-based tests (like ELISA) unreliable

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hypertrophy, and (4) Pulmonary stenosis (which reduces pulmonary blood flow). Although children with TOF may eventually develop secondary changes, true pulmonary arterial hypertension is not a defining feature; instead, the obstruction lies at or below the pulmonary valve. Thus, (c) is the incorrect association.

**67.** (b) It does not occur in a physically fit person

High altitude pulmonary edema (HAPE) can happen in anyone who ascends rapidly to high altitude, even physically fit individuals. It arises due to elevated pulmonary artery pressures and alveolar-capillary membrane stress, causing a non-cardiogenic pulmonary edema. Physical exertion, cold, and hypoxia can aggravate it. Management includes prompt descent or use of a portable hyperbaric chamber to reduce altitude-related hypoxia. Thus, the notion that physically fit persons are spared (option b) is incorrect.

**68.** (c) Dissection of aorta

Myocardial infarction can trigger various complications: arrhythmias (e.g., ventricular fibrillation), mechanical disruptions (ventricular septal rupture, papillary muscle rupture), and mural thrombosis leading to systemic embolism. Aortic dissection, however, involves a tearing of the aortic wall layers and is not a typical sequel of an MI. It has different etiologic mechanisms (e.g., uncontrolled hypertension, connective tissue disorders).

**69.** (d) 1, 2 and 3

The Philadelphia chromosome (t(9;22), BCR-ABL fusion) can be detected using standard cytogenetics (karyotyping) to visualize the translocation, by FISH (fluorescence in situ hybridization) to detect the fusion signals, or by PCR to amplify and demonstrate the specific BCR-ABL gene fusion product. Hence, all three techniques—FISH, PCR, and cytogenetics—can identify this hallmark of chronic myelogenous leukemia (CML).

**70.** (a) Absence of gastrointestinal symptoms rules out celiac disease

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Celiac disease can present not only with GI manifestations (like diarrhea, malabsorption) but also with extra-intestinal features (iron deficiency anemia, osteopenia, dermatitis herpetiformis). Many patients have few or no classic GI symptoms, so their disease is missed if one assumes GI complaints must be present. A small bowel biopsy showing increased intraepithelial lymphocytes is diagnostic. In certain refractory cases, steroids may help induce remission.

**71.** (c) Acute glomerulonephritis with hypertensive encephalopathy

In a child with sudden onset edema, hematuria, severe hypertension, and elevated urea, acute post-streptococcal glomerulonephritis is highly suggestive. Convulsions indicate hypertensive encephalopathy. Hemolytic uremic syndrome typically shows a triad of microangiopathic hemolytic anemia, thrombocytopenia, and renal failure. Nephrotic syndrome predominantly features heavy proteinuria, hypoalbuminemia, and edema but not usually extreme hypertension and seizures. Obstructive uropathy seldom presents with acute severe HTN and frank hematuria of this nature.

**72.** (a) Acute poliomyelitis

Acute poliomyelitis is characterized by a febrile prodrome followed by the sudden onset of asymmetric flaccid paralysis with diminished or absent deep tendon reflexes. Sensory function remains largely intact, and the child's sensorium is normal. Guillain-Barré syndrome (infective polyneuritis) often presents with symmetrical ascending weakness, while transverse myelitis typically includes a sensory level and possible sphincter involvement. Rheumatic fever does not present with flaccid paralysis.

**73.** (b) Cytomegalovirus infection

Periventricular calcifications on cranial imaging are pathognomonic for congenital CMV infection, which can also feature microcephaly and sensorineural hearing loss. Tuberculous meningitis may cause basilar meningeal enhancement and infarcts, while congenital syphilis and Japanese encephalitis have different radiologic patterns. Hence, the hallmark finding

**90.** (d) Hypodiploidy

Good prognostic indicators in childhood ALL include being age 1–9 years, WBC count <50,000/mm$^3$, and female sex. Hyperdiploidy (often >50 chromosomes) is also considered a favorable cytogenetic feature. By contrast, hypodiploidy (fewer than the normal 46 chromosomes) is associated with a poorer prognosis. Hence hypodiploidy is the exception among the listed "good" prognostic factors.

**91.** (c) Both 1 and 2

A well-known pattern in ecology is the latitudinal biodiversity gradient, where species richness generally increases as one moves from the poles (higher latitudes) toward the tropics (lower latitudes). A similar pattern exists along elevational gradients: lower altitudes typically harbor more diverse flora and fauna compared to higher, more extreme altitudes. Thus, both statements accurately describe how biodiversity declines with increasing latitude and altitude.

**92.** (a) It will result in the increase of methane concentration in atmosphere.

Arctic permafrost contains significant amounts of organic material that, upon thawing, is decomposed by microbes, releasing methane (a potent greenhouse gas) into the atmosphere. This positive feedback loop accelerates global warming. Although melting ice might contribute to sea-level changes, the question's principal worry is the methane release. Drastic changes in ocean temperature or pH can occur for other reasons, but the immediate permafrost concern centers on greenhouse gas emissions.

**93.** (a) 1 only

Under the PCPNDT Act, offences are treated as cognizable, non-bailable—making statement 1 correct. However, the penalty details stated in statement 2 do not match the standard legal provisions, which specify a first-offence imprisonment of up to three years and a fine up to ₹10,000 (with heavier penalties for subsequent offences). Thus, statement 2 as worded here is inaccurate.

**94.** (c) Convention on Biological Diversity

The Nagoya Protocol is a supplementary agreement to the Convention on Biological Diversity (CBD). It deals specifically with Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS). It aims to ensure that countries and local communities receive benefits when their native biodiversity or genetic material is used commercially or for research. It does not belong to CITES, CMS, or the Ramsar Convention.

**95.** (b) 1, 3 and 4 only

Short-Lived Climate Forcers (SLCFs) are atmospheric constituents with relatively short lifespans but a strong warming influence. Examples include black carbon (soot particles), methane, tropospheric ozone, and many hydrofluorocarbons (HFCs). By contrast, carbon dioxide ($CO_2$) remains in the atmosphere for a very long time (centuries) and is not categorized as "short-lived." Hence 1, 3, and 4 fit this definition.

**96.** (b) 2 only

Blended cements (using fly ash or slag) are generally more energy-efficient and eco-friendly than ordinary portland cement, so statement 1 is incorrect. Meanwhile, in India, power generation (electricity and heat production) is indeed the top source of greenhouse gas emissions, contributing substantially to $CO_2$ output. Thus, statement 2 is correct.

**97.** (a) Less than 20%

Over the decades, India's GDP composition has shifted significantly toward services and industry. While agriculture remains vital for employment, its share in India's GDP has generally trended below 20% in recent years. Government data consistently show the agriculture sector in the mid to high teens range as a percentage of total GDP. Hence (a) "Less than 20%" is the most accurate choice among those listed.

**98.** (d) $SF_6$

Sulphur hexafluoride ($SF_6$) has the highest global warming potential (GWP) among these commonly listed greenhouse gases. Its GWP

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"known ozone-depleting substances" among the three.

**116.** (b) 2 only

Certain organochlorine pesticides (e.g., DDT, chlordane, dieldrin) are indeed classified as Persistent Organic Pollutants (POPs) because they persist in the environment and bioaccumulate. However, statement 1 is too absolute; these chemicals can also enter humans via inhalation, direct skin contact, or contaminated dust, not just the food chain. Hence only statement 2 is correct.

**117.** (d) 1, 2 and 3

Metallic mercury released into the environment can be converted by microbes into highly toxic methyl mercury. Mercury also enters humans via inhalation of vapors (e.g., from spills or industrial emissions). A major exposure route is consumption of contaminated fish, wherein mercury bioaccumulates and biomagnifies. Thus, all three statements are correct.

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**118.** (b) 2 only

Under the Indian Constitution, the executive power of a State is formally vested in the Governor (Article 154), not directly in the Chief Minister. While the Chief Minister heads the Council of Ministers, the Governor is the constitutional executive authority. Union Territories, however, are indeed administered by the President through Administrators or Lieutenant Governors (depending on the UT). Hence only statement 2 is correct.

**119.** (b) Mutton

Livestock products typically require far more water input than most crops. Among the listed items, mutton production consumes significantly higher water resources per kilogram compared to barley, wheat, or potato. The water demand arises from animal feed production, drinking water, and farm processes. Consequently, mutton stands out as requiring the largest water footprint of the given options.

**120.** (a) A targetted genome editing technique

CRISPR-Cas9 is a revolutionary genome-editing tool derived from a bacterial defense system. It uses a guide RNA to direct the Cas9 nuclease to a specific DNA sequence, allowing precise cuts or modifications. It has wide applications in basic research, biotechnology, and potential clinical therapies. It is not itself a cancer gene or a surgical procedure, and it is distinct from electrophoretic techniques.

END

Bauxite reserves in India are most abundant in the eastern and central regions, particularly Odisha (the largest bauxite-producing state) and adjoining areas of Jharkhand. Assam, West Bengal, and the other pairs listed do not match the primary belt of bauxite concentration, which is firmly established in Jharkhand-Odisha and parts of Chhattisgarh and Andhra Pradesh.

**108.** (d) WTO

The "Doha Development Round" (or Doha Development Agenda) is a series of trade negotiations under the World Trade Organization (WTO). Initiated in 2001 in Doha, Qatar, it aims to achieve major reforms of the international trading system through the introduction of lower trade barriers and revised trade rules, with an emphasis on addressing the needs of developing countries. It does not relate directly to the UNFCCC (climate), UNCTAD, or UNDP.

**109.** (b) 2 only

MSG (monosodium glutamate) is simply the sodium salt of glutamic acid, an amino acid that does occur naturally (for example, in tomatoes and cheeses). Hence statement 1 is incorrect—glutamate is indeed found in nature. Meanwhile, glutamate functions as a major excitatory neurotransmitter in the human brain, so statement 2 is correct.

**110.** (a) executive is responsible to the legislature

A key principle of the parliamentary system (e.g., India, UK) is the collective responsibility of the Executive (Council of Ministers) to the Legislature (Parliament). The Prime Minister and cabinet must retain the confidence of the majority in the lower house, demonstrating accountability to elected representatives. By contrast, the legislature is not "responsible" to the executive, nor is the judiciary normally subservient to the executive in such a system.

**111.** (b) conservation of wetlands

The Ramsar Convention (signed in Ramsar, Iran, 1971) is an international treaty for the conservation and sustainable use of wetlands. It strives to halt the encroachment on and loss of wetlands, recognizing their ecological importance and promoting wise use. It does not focus directly on forest conservation, greenhouse gas emissions, or wildlife trafficking, though indirectly wetlands support biodiversity and mitigate climate impacts.

**112.** (a) Prime Minister

Under the Disaster Management Act, the National Disaster Management Authority (NDMA) is chaired by the Prime Minister of India. It is the apex body for disaster management, formulating policies, plans, and guidelines to ensure effective response to various calamities. Other ministries and authorities work under its umbrella, but the PM remains the overall head.

**113.** (a) 1, 2 and 3

Natural gas is a versatile feedstock. It is used not only to generate electricity (via gas turbines) but also to synthesize ammonia for fertilizers (Haber-Bosch process). It is further used as a raw material in petrochemical and chemical industries, which produce a variety of end-products including components for detergents and soaps. Therefore, it finds application in all three listed areas.

**114.** (d) 1, 2 and 3

Mercury accumulates in various tissues. Blood testing can detect recent or ongoing exposure. Hair and nails (both keratin-rich) reflect longer-term accumulation of mercury and other heavy metals. As a result, all three—blood, hair, and nail—can be analyzed for mercury exposure and toxicity.

**115.** (b) 2 only

Halons (brominated compounds) are recognized ozone-depleting substances under the Montreal Protocol, similar to CFCs. Black carbon, though a significant climate forcer, is not classed as an ODS. Nitrogen oxides can influence ozone chemistry, especially in the upper atmosphere, but they are not conventionally listed among the main regulated ODS (CFCs, HCFCs, halons, etc.). Thus, only halons squarely fit the label

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dwarfs that of carbon dioxide (GWP=1), methane (~25), and nitrous oxide (~298). $SF_6$ can exceed 20,000+ times the warming effect of $CO_2$ over a 100-year time frame. Although less abundant in the atmosphere, even small amounts can have a significant impact on radiative forcing.

**99.** (c) 3 only

The Kyoto Protocol targets a basket of six greenhouse gases: carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride ($SF_6$). Brominated flame retardants and methyl alcohol (methanol) are not among the substances controlled by Kyoto. Hence only HFCs (item 3) are included in the Protocol.

**100.** (a) 1 and 3 only

Sulfites are commonly used to prevent enzymatic browning in processed fruits and vegetables, thus statement 1 is correct. However, sulfites can degrade thiamine (vitamin $B_1$), leading to its destruction (statement 3). They do not preserve thiamine (4) nor significantly increase sour taste (2); a mild acidic note may occur, but it is not their primary known function. Therefore, only 1 (prevent browning) and 3 (destroy thiamine) apply.

**101.** (d) 1, 2, 3 and 4

All four listed substances can act as antioxidants. Ascorbic acid (vitamin C) and tocopherol (vitamin E) are well-known natural antioxidants. BHA (butylated hydroxyanisole) is a synthetic preservative used to prevent rancidity. Stannous chloride ($SnCl_2$) can function as a reducing agent, helping to inhibit oxidative spoilage in certain processes. Hence 1, 2, 3, and 4 each exhibit antioxidant properties.

**102.** (c) 1 and 3 only

Carboxymethyl cellulose (CMC) and propylene glycol are indeed employed in food processing with emulsifying or stabilizing functions. CMC helps thicken/stabilize emulsions, while propylene glycol can act as a solvent/emulsifier. Ethylenediamine tetra-acetic acid (EDTA), by contrast, is mainly a chelating agent used to bind metal ions and prevent oxidation, not to emulsify. Therefore, items 1 and 3 are correct emulsifiers in the context of food processing, whereas EDTA is not.

**103.** (c) Starch

A blue or blue-black coloration after adding a few drops of iodine is a classic test for starch. Adulterators sometimes add starch to milk to increase thickness or "solids" content cheaply. None of the other listed substances (sodium bicarbonate, glucose, or urea) develop this distinctive blue color when treated with iodine solution. Hence, a blue coloration confirms starch adulteration in milk.

**104.** (b) 2 only

Pasteurization does not kill all microorganisms; it reduces or eliminates pathogenic microbes but is not a complete sterilization process. Therefore, statement 1 is incorrect. Statement 2 is correct because high-acid foods (e.g., fruit products with low pH) require less heat/time to achieve sterilization, whereas low-acid foods need more stringent heat treatment to destroy resistant microbes and spores.

**105.** (c) Both 1 and 2

Fruit juices are often pasteurized (mild heating) to inactivate enzymes and kill harmful microbes, extending shelf life. Meanwhile, "water glass" (a common name for sodium silicate solution) is a traditional method of preserving fresh eggs by sealing their shells and minimizing bacterial entry. Both statements accurately describe known preservation/processing practices.

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**106.** (a) 1 only

Cobalt-60 emits gamma rays—a form of ionizing radiation—commonly used to irradiate foods and reduce microbial contamination. Statement 1 is true. Statement 2 is incorrect because UV rays are not classified as ionizing radiation; they possess lower energy than needed to ionize molecules. Other ionizing sources (e.g., electron beams, X-rays) can also be used, not UV.

**107.** (a) Jharkhand and Odisha

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for diagnosing the infant's HIV status. The recommended confirmatory test in early infancy is a virologic test such as HIV-1 DNA or RNA PCR, which detects the virus itself. p24 antigen assays are less sensitive in neonates, and a CD4 count is more for immunological monitoring rather than initial diagnosis.

**83.** (c) Copying a square

By three years, children can pedal a tricycle, use their hands and feet in coordinated actions like climbing, and often begin to handle scissors (though clumsily). Copying geometric shapes emerges progressively: a circle around age three, but a square is generally closer to age four or five. Therefore, copying a square is not expected for a typical three-year-old.

**84.** (d) Coarctation of aorta

Coarctation of the aorta classically presents with weak, delayed femoral pulses compared to brachial pulses ("radio-femoral delay"), often noticed when the child experiences leg fatigue or claudication on exertion. The upper limb blood pressure is higher than in the lower limbs, and children may have a normal-sized heart but a forceful left ventricular (LV) impulse from pressure overload. Other lesions like VSD, PDA, or ASD do not typically produce this brachial–femoral discrepancy or the classic exertional leg symptoms.

**85.** (b) Galactosemia

In neonates, galactosemia commonly presents with feeding difficulties (vomiting, diarrhea), jaundice, and the development of cataracts (often bilateral) due to toxic metabolites of galactose. Symptoms usually begin after the infant is started on milk feeds containing lactose (galactose + glucose). Congenital rubella can indeed cause cataracts but typically also features cardiac defects (e.g., PDA) and sensorineural deafness. Rh incompatibility leads to hemolysis and jaundice but not cataracts. Hence galactosemia is the most likely cause.

**86.** (b) Intravenous immunoglobulins

Guillain-Barré syndrome (GBS) is an acute inflammatory demyelinating polyneuropathy often presenting with ascending weakness and areflexia. The mainstay of treatment is high-dose intravenous immunoglobulins (IVIG), which shortens recovery time by modulating the immune attack on peripheral nerves. Plasmapheresis is also an alternative therapy. Corticosteroids have not shown consistent benefit in GBS, cyclosporine is not standard, and ACTH is not indicated. Therefore, IVIG is the first-line treatment.

**87.** (b) Tubercular meningitis

Tubercular meningitis typically has a subacute onset (e.g., fever for weeks) and characteristic CSF findings: raised pressure, clear appearance, lymphocyte-predominant pleocytosis, elevated protein, and low glucose/chloride. Pyogenic (bacterial) meningitis usually shows a more acute course with neutrophilic pleocytosis, very high WBC counts, and often turbid CSF. Acute encephalitis usually has different CSF patterns, and SSPE presents with progressive neurological decline over months/years related to measles virus. Hence the subacute presentation with these CSF changes points to TB meningitis.

**88.** (d) Polydactyly

Turner syndrome (45, XO) typically presents with short stature, webbed neck, broad chest with widely spaced nipples (shield chest), cubitus valgus (increased carrying angle at the elbow), and ovarian dysgenesis leading to delayed puberty. Polydactyly (extra digits) is not a recognized feature of Turner syndrome. Thus, (d) is the exception among the common physical findings of Turner syndrome.

**89.** (b) Aspirin

Steroid-sparing agents help achieve remission in frequently relapsing or steroid-dependent nephrotic syndrome. Common immunosuppressives used include levamisole, cyclophosphamide, and mycophenolate mofetil. These agents allow reduction or discontinuation of steroids while maintaining remission. Aspirin, although useful as an antiplatelet agent in certain conditions, does not reduce relapse frequency in nephrotic syndrome and is not a recognized steroid-sparing option.

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7. Which one of the following is not likely to be associated with pulmonary fibrosis?
(a) Coal miners' lung
(b) Primary biliary cirrhosis
(c) Asbestosis
(d) Ankylosing spondylitis

8. Which of the following is/are a feature/features of severity in immediate assessment of acute severe asthma?
1. Pulse rate >110 per min
2. Pulsus paradoxus
3. Unable to speak in sentences
Select the correct answer using the code given below:
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

9. Cavitating pulmonary lesions can be seen in the following except:
(a) Sarcoidosis
(b) Tuberculosis
(c) Carcinoma of lung
(d) Histoplasmosis

10. A 35 year old 40 kg male patient was diagnosed to be a case of pulmonary tuberculosis. The appropriate conventional regimen of antitubercular drugs would be:
(a) Rifampicin 450 mg + Isoniazid 300 mg + Pyrazinamide 1500 mg
(b) Rifampicin 600 mg + Isoniazid 300 mg + Pyrazinamide 1000 mg
(c) Rifampicin 450 mg + Isoniazid 200 mg + Pyrazinamide 1000 mg
(d) Rifampicin 450 mg + Isoniazid 200 mg + Pyrazinamide 1500 mg

11. Which of the auscultatory signs is absent in mitral stenosis in the presence of atrial fibrillation?
(a) Mid diastolic murmur
(b) Pre-systolic accentuation
(c) Variable first heart sound
(d) $P_2$ accentuation

12. Which one of the following is not recommended in immediate treatment of acute severe asthma?
(a) Oxygen supplementation
(b) High doses of inhaled $B_2$–adrenoreceptor agonists
(c) Systemic corticosteroids
(d) Intravenous aminophylline

13. Which one of the following is not a feature of type 2 respiratory failure ?
(a) $pCO_2$ 38 mmHg, and $pO_2$ 50 mmHg
(b) $pCO_2$ 68 mmHg, and $pO_2$ 50 mmHg
(c) Papilloedema
(d) Asterixis

14. Which of the following drugs is not given in dilated cardiomyopathy?
(a) Beta blocker
(b) Calcium channel blocker
(c) Spironolactone
(d) ACE inhibitors

15. Which of the following features are related to Zollinger Ellison syndrome?
1. Aggressive and refractory peptic ulceration
2. Unregulated gastrin release
3. Beta islet cell tumour of pancreas
4. Diarrhoea present in upto 50% cases
Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 3 and 4
(c) 1, 2 and 3
(d) 1, 2 and 4

16. In which of the following diseases, primary skin lesions are not seen?
(a) Leptospirosis
(b) SLE
(c) Hepatitis-B
(d) Infectious mononucleosis

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**54.** Match List-I with List-II and select the correct answer using the code given below the lists:

| | **List-I (drug)** | | **List-II (side effect)** |
|---|---|---|---|
| A | Phenytoin sodium | 1 | Hypothyroidism |
| B | Para aminosalicylic acid | 2 | Hepatotoxicity |
| C | Rifampicin | 3 | 8th nerve damage |
| D | Streptomycin | 4 | Cerebellar dysfunction |

(a) A-4, B-1, C-2, D-3
(b) A-1, B-4, C-2, D-3
(c) A-3, B-4, C-2, D-1
(d) A-4, B-2, C-3, D-1

**55.** Match List-I with List-II and select the correct answer using the code given below the lists:

| | **List-I (disease state)** | | **List-II (clinical feature)** |
|---|---|---|---|
| A | Pemphigus vulgaris | 1 | Acro–osteolysis |
| B | Psoriasis | 2 | Brachydactyly |
| C | Turner syndrome | 3 | Koebner phenomenon |
| D | Primary hyperparathyroidism | 4 | Nikolsky sign |

(a) A-4, B-1, C-2, D-3
(b) A-1, B-4, C-2, D-3
(c) A-3, B-4, C-2, D-1
(d) A-4, B-3, C-2, D-1

**56.** A 10 year old child 'blanks out' in class (e.g. stops talking midsentence and then continues as if nothing had happened). During spells there is slight quivering of lips. What is the most probable diagnosis?
(a) Mutism
(b) Autism
(c) Adjustment disorder
(d) Absence seizure

**57.** A 45 year old man presents with hematuria. Renal biopsy demonstrates a focal necrotizing glomerulitis with crescent formation. The patient gives history of intermittent hemoptysis and intermittent chest pain of moderate intensity. A previous chest X-ray had demonstrated multiple opacities, some of which were cavitated. The patient also has chronic cold like nasal symptoms. What is the most probable diagnosis?
(a) Aspergillosis
(b) Polyarteritis nodosa
(c) Renal carcinoma metastatic to lung
(d) Wegner's granulomatosis

**58.** A 28 year old woman presented with high grade fever, cough, diarrhea and mental confusion for 4 days. X-ray chest revealed bilateral pneumonitis. Search for etiology will most likely reveal
(a) Streptococcus pneumoniae
(b) Staphylococcus aureus
(c) Legionella pneumophila
(d) Pseudomonas aeruginosa

**59.** Congenital heart disease associated with pre-excitation is:
(a) Atrial septal defect
(b) Bicuspid aorta valve
(c) Ebstein's anomaly
(d) Patent ductus arteriosus

**60.** Hockey-stick appearance in echocardiography is a feature of:
(a) Mitral stenosis
(b) Mitral incompetence
(c) Aortic stenosis
(d) Aortic regurgitation

**61.** Hutchinson sign is a feature of ocular involvement by which of the following viruses?
(a) Herpes simplex
(b) Epstein-Barr virus
(c) Cytomegalovirus
(d) Herpes zoster

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**26.** Haemolysis in G6PD (glucose 6 phosphate dehydrogenase) enzyme deficiency may occur with all of the following drugs except:
(a) Primaquine
(b) Phenacetin
(c) Probenecid
(d) Penicillin

**27.** Match List-I with List-II and select the correct answer using the code given below the lists:

| | **List-I (Blood picture)** | | **List-II (Type of Anaemia)** |
|---|---|---|---|
| A | Microcytic, hypochromic red cells | 1 | Vitamin $B_{12}$ deficiency anaemia |
| B | Macrocytic, hypochromic red cells | 2 | Thalassemia major |
| C | Large number of early, intermediate and late erythroblasts | 3 | Aplastic anaemia |
| D | Low reticulocyte count | 4 | Iron-deficiency anaemia |

(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-2 D-4

**28.** Which of the following conditions does not cause pancytopenia?
(a) Hypersplenism
(b) Aplastic anaemia
(c) Cancer infiltrating the bone-marrow
(d) Haemolysis from G6PD enzyme deficiency

**29.** Which of the following drugs does not cause oedema?
(a) Growth hormone
(b) Beta blocker
(c) Anabolic steroids
(d) Calcium-channel blockers

**30.** A patient of hypoglycemia fails to regain consciousness after blood glucose is restored to normal. The complication that carries high mortality and morbidity is:
(a) Cerebral oedema
(b) Lacunar infarct
(c) Post ictal state
(d) Cerebral haemorrhage

**31.** An adult patient presents with systemic hypertension, renal calculus disease and peptic ulcer disease. Which one of the following is most likely occurrence in this case?
(a) Milk – alkali syndrome
(b) Hypervitaminosis – D
(c) Primary hyperparathyroidism
(d) Tubulo – interstitial renal disease

**32.** Match List-I with List-II and select the correct answer using the code given below the lists:

| | **List-I (types of hyperlipidemia)** | | **List-II (feature)** |
|---|---|---|---|
| A. | Hyperchylo micronaemia | 1. | Palmar plantar xanthoma |
| B. | Hyperbeta lipoproteinaemia | 2. | Subcutaneous extensive tendon xanthoma |
| C. | Type III hyperlipo proteinaemia | 3. | Eruptive xanthoma over buttocks |
| D. | Familial LPL deficiency | 4. | Triglyceride level above 1000 mg% |

(a) A-3, B-1, C-2, D-4
(b) A-3, B-2, C-1, D-4
(c) A-4, B-1, C-2, D-3
(d) A-4, B-2 C-1, D-3

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**33.** Which of the following is least suggestive of poliovirus infection?
(a) Low grade fever and malaise with complete resolution in 2 to 3 days
(b) Biphasic illness with several days of fever, then meningeal symptoms and asymmetric flaccid paralysis 5 to 10 days later
(c) Descending motor paralysis with preservation of tendon reflexes and absent sensation
(d) Failure to isolate a virus from the CSF in the presence of marked meningismus

**17.** Which of the following is not a common feature of hypersensitivity pneumonitis?
(a) Raised C-Reaction Protein
(b) Chest X-ray may be normal
(c) Lung biopsy may be diagnostic
(d) Eosinophilia

**18.** Consider the following statements with regard to duodenal ulcers:
1. They occur most often in the second part of duodenum.
2. Infection with H. pylori and NSAID–induced injury account for the majority of duodenal ulcers.
3. Malignant duodenal ulcers are extremely rare.
4. Eradication of H. pylori has greatly reduced the recurrence rates in duodenal ulcers.

Which of the above statements is/are correct?
(a) 1 and 3 only
(b) 2, 3 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

**19.** Carcinoid tumours commonly arise from:
(a) G. cells in pancreas
(b) Argentaffin cells of small intestine
(c) Pancreatic endocrine tumour
(d) Colon polyps

**20.** Which of the following viral markers signifies the ongoing viral replication in the case of Hepatitis-B infection?
(a) Anti-HBs
(b) Anti-HBc
(c) HBe Ag
(d) HBs Ag

**21.** The following may result in polyuria except:
(a) Chronic renal failure
(b) Hypoadrenalism
(c) Hypercalcaemia
(d) Lithium carbonate therapy

**22.** Regarding adult polycystic kidney disease, which one of the following statements is not correct?
(a) Inherited as autosomal dominant with 100% penetrance
(b) Often associated with hepatic cysts
(c) Associated with increased incidence of subarachnoid haemorrhage
(d) Renal cell carcinoma is a frequent association

**23.** Which of the following is not a feature of chronic renal failure?
(a) Hyperparathyroidism
(b) Osteomalacia
(c) Hyperthyroidism
(d) Decreased 1, 25$(OH)_2$ vitamin $D_3$ level

**24.** A patient with past history of recurrent headache, presents with irregular, dazzling, enlarging visual phenomena that obstructs vision in the affected region and remains for several minutes. The symptoms are indicative of:
(a) Acute angle closure glaucoma
(b) Retinal detachment
(c) Migraine
(d) Intumescent cataract

**25.** Match List-I with List-II and select the correct answer using the code given below the lists:

| | **List-I (Disease)** | | **List-II (Cause)** |
|---|---|---|---|
| A. | Macrocytic anaemia | 1. | Iron deficiency |
| B. | Microcytic anaemia | 2. | Hypothyroidism |
| C. | Hemolytic anaemia | 3. | Vitamin $B_{12}$ deficiency |
| D. | Megaloblastic anaemia | 4. | Alpha methyldopa |

(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-2 B-1 C-4 D-3
(d) A-3 B-1 C-2 D-4

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**45.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Clinical features)** | | **List II (Deficiency of)** |
|---|---|---|---|
| A | Flaky paint rashes of lower extremity | 1 | Niacin |
| B | Goose-hump skin lesion | 2 | Thiamine |
| C | Confabulation | 3 | Zinc |
| D | Dementia | 4 | Vitamin A |

Code:
(a) A-1, B-2, C-4, D-3
(b) A-1, B-4, C-2, D-3
(c) A-3, B-4, C-2, D-1
(d) A-3, B-2, C-4, D-1

**46.** Consider the following:
1. Psoriasis
2. Atopic dermatitis
3. Leprosy
4. Vitiligo

PUVA therapy can be used to treat which of the above?
(a) 1 and 2 only
(b) 2 and 3
(c) 1, 2 and 4
(d) 3 and 4

**47.** The cutaneous viral infection which is commonly seen in children and characterized by single or multiple pearly-white skin colored smooth dome shaped papules with central pitting is:
(a) Chicken pox
(b) Herpes zoster
(c) Molluscum contagiosum
(d) Verruca vulgaris

**48.** Consider the following statements about polyarticular juvenile rheumatoid arthritis:
1. It is more common in girls
2. Five or more joints are affected within the first six months of onset
3. Uveitis occurs in 95% patients
4. Rheumatoid factor may be negative

Which of the statements given above are true?
(a) 1 and 4 only
(b) 1, 2 and 4
(c) 2, 3 and 4
(d) 2 and 3 only

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**49.** Consider the following statements regarding schizophrenia:
1. Patient feels that other persons put thoughts into his mind
2. Patient feels that he is being punished for his wrong doings
3. He may be in a state of catatonia

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**50.** Lithium carbonate is employed in the following conditions except:
(a) To treat acute episodes of mania
(b) To prevent recurrence of mania
(c) To prevent depression in bipolar disorders
(d) To prevent depression in unipolar disorders

**51.** The following conditions can cause protein-losing enteropathy except:
(a) Ulcerative colitis
(b) Irritable bowel syndrome
(c) Celiac disease
(d) Lymphoma

**52.** Which of the following ocular findings is a component of Foville syndrome?
(a) Lateral gaze palsy
(b) 6th N Palsy
(c) 3rd N Palsy
(d) Nystagmus

**53.** The following features are suggestive of Behcet's syndrome except:
(a) Orogenital ulcers
(b) Polyarthritis
(c) Uveitis
(d) Livedo reticularis

**88.** A previously well 2 year old boy presents with a brief generalized seizure. There is no past or family history of seizures. On examination, child is alert, active, febrile with axillary temperature of 39.4°C. Except for bilateral tonsillar enlargement and congestion, systemic examination is normal. Management at this time may include:

1. Immediate reduction of body temperature
2. Intravenous diazepam and phenytoin, followed by a lumbar puncture
3. Institution of phenytoin for maintenance therapy for at least one year
4. Rectal diazepam every 8 hourly for 2-3 days to reduce the risk of recurrence

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 1 and 4 only
(c) 3 and 4
(d) 1, 2 and 4

**89.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Endocrinological disorders)** | | **List II (Results of investigations)** |
|---|---|---|---|
| A | Hypothyroidism | 1 | Increased urinary excretion of catecholamines |
| B | Cushing's syndrome | 2 | Increased urinary 17-ketosteroids |
| C | Pheochromocytoma | 3 | Hypocalcaemia and hyperphosphataemia |
| D | Hypoparathyroidism | 4 | TSH levels are increased and $T_3$, $T_4$ levels are decreased |

Code:

(a) A-4, B-2, C-1, D-3
(b) A-3, B-4, C-2, D-1
(c) A-3, B-4, C-1, D-2
(d) A-4, B-3, C-2, D-1

**90.** Match List I with List II and select the correct answer using the Code given below the lists:

| | **List I (Clinical presentation)** | | **List II (Disease pathology)** |
|---|---|---|---|
| A | Extrapyramidal cerebral palsy | 1 | Stroke |
| B | Spastic quadriplegia | 2 | Multicystic encephalomalacia |
| C | Spastic hemiplegia | 3 | Periventricular leukomalacia |
| D | Spastic diplegia | 4 | Bilirubin encephalopathy |

(a) A-4, B-2, C-1, D-3
(b) A-3, B-4, C-2, D-1
(c) A-3, B-4, C-1, D-2
(d) A-4, B-2, C-1, D-3

**91.** Consider the following pairs:

| | **National Park** | **State** |
|---|---|---|
| 1 | Keoladeo Ghana National Park | Rajasthan |
| 2 | Sultanpur National Park | Uttar Pradesh |
| 3 | Valley of Flowers National Park | Himachal Pradesh |

Which of the pairs given above is/are correctly matched?

(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**92.** The Himalayas have snowline at higher altitude compared to that in the Alps mountains. This is because

(a) Himalayas are higher than the Alps
(b) Himalayas face the monsoon winds
(c) Himalayas are located in lower latitudes
(d) Himalayas have denser forest cover

**93.** The knowledge of genome sequence is important to

1. understand how genes work together in the growth and development of an entire organism.

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**62.** Well recognised side-effects of prolonged phenytoin use may result in all except:
(a) Hirsutism
(b) Lymphadenopathy
(c) Ataxia
(d) Hypoglycaemia

**63.** First order neurons in the visual pathway are constituted by:
(a) Bipolar cells
(b) Amacrine cells
(c) Ganglion cells
(d) Rods and cones

**64.** Level of which hormone is likely to increase after hypothalamic ablation?
(a) Growth hormone
(b) Prolactin
(c) FSH
(d) ACTH

**65.** A 50 year old patient with signs of peripheral neuropathy is found to have diabetes mellitus. He has no ocular symptoms. When would you refer this patient for retina evaluation?
(a) When he develops ocular symptoms
(b) Immediately
(c) If he needs insulin for blood sugar
(d) Five years after diagnosis

**66.** Which one of the following tests has the highest chance of detecting HIV infection in a blood donor during the window period?
(a) Demonstration of antibody to HIV by ELISA
(b) CD4 count
(c) p24 antigen detection
(d) Western blot test

**67.** The following are exotoxin-mediated infections except:
(a) Cholera
(b) Typhoid
(c) Botulism
(d) Tetanus

**68.** The following tests can be used for diagnosing celiac disease except:
(a) Anti-gliadin antibodies
(b) Anti-nuclear antibodies
(c) Anti-endomycial antibodies
(d) Anti-tissue transglutaminase antibodies

**69.** Which one of the following is not an early complication of acute myocardial infarction?
(a) Papillary muscle dysfunction
(b) Ventricular septal defect
(c) Pericarditis
(d) Dressler's syndrome

**70.** Consider the following conditions:
1. Thyrotoxicosis, phaeochromocytoma and acromegaly
2. Haemochromatosis
3. Conn's syndrome (primary hyperaldosteronism)
4. Pancreatic carcinoma

Which of the above may result in secondary diabetes mellitus?
(a) 2 and 3 only
(b) 1, 2 and 4
(c) 1, 3 and 4
(d) 1, 2 and 3

**71.** Consider the following statements:
Gastric lavage is contraindicated in children in case of
1. iron poisoning
2. kerosene poisoning
3. corrosive poisoning
4. aspirin poisoning

Which of the above statements are correct?
(a) 2, 3 and 4
(b) 1, 2 and 4
(c) 2 and 3 only
(d) 1 and 3

**72.** Consider the following:
1. Visible gastric peristalsis
2. Bilious vomiting
3. Palpable mass
4. Melena

Which of the above is/are the feature/features of infantile hypertrophic pyloric stenosis?

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(a) 1, 2 and 3
(b) 1 and 3 only
(c) 2 and 4
(d) 4 only

**73.** A very large ventricular septal defect should be operated:
(a) In school going age
(b) Only if CHF is uncontrolled
(c) Before six months of age
(d) Soon after birth

**74.** A 2 year old boy is being evaluated for severity of malnutrition. The child weighs 7 kg and measures 74 cm in length. Expected (median) weight for height, and height for age for this child are 9 kg and 86 cm respectively. According to WHO classification of undernutrition, which of the following is the correct category for this child?
(a) Wasted, stunted
(b) Wasted, severly stunted
(c) Severly wasted, stunted
(d) Severly wasted, severly stunted

**75.** Catch-up diet for treatment of severe malnutrition in children should achieve the following:
(a) Calorie 150-220 kcal/kg/d; protein 4-6 g/kg/d
(b) Calorie 125-175 kcal/kg/d; protein 4-6 g/kg/d
(c) Calorie 125-175 kcal/kg/d; protein 2-4 g/kg/d
(d) Calorie 150-220 kcal/kg/d; protein 2-4 g/kg/d

**76.** Which one of the following is not a feature of vitamin D deficiency rickets?
(a) Decrease in parathyroid hormone level
(b) Decrease in gut calcium absorption
(c) Decrease in renal phosphate excretion
(d) Increase in serum alkaline phosphatase

**77.** A child presents with moderate fever for two months. On examination, she had moderate anaemia and a few petechia. All the following can be the diagnosis except:
(a) Acute leukemia
(b) Tuberculosis
(c) Typhoid
(d) Juvenile rheumatoid arthritis

**78.** Which of the following statements is true regarding juvenile chronic myeloid leukemia?
(a) Philadelphia chromosome is negative
(b) Thrombocytopaenia is uncommon
(c) The prognosis is better than the adult form of chronic myeloid leukemia
(d) Single agent chemotherapy with busulfan or hydroxyurea can achieve remission

**79.** Consider the following features:
1. X-linked recessive inheritance
2. Atopic dermatitis
3. Low serum levels of IgA

Which of the above is/are the characteristic features of Wiskott-Aldrich syndrome?
(a) 1 only
(b) 1 and 2 only
(c) 3 only
(d) 1, 2 and 3

**80.** Lisch nodules are seen in which of the following conditions?
(a) von Recklinghausen's disease
(b) Louis-bar syndrome
(c) Tuberous sclerosis
(d) von Hippel-Lindau syndrome

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**81.** A 5 year old child presented with microcytic hypochromic anaemia. Serum ferritin is low. Which of the following is least likely?
(a) Celiac disease
(b) Thalassemia major
(c) Nutritional anaemia
(d) Paroxysmal nocturnal haemoglobinuria

**82.** An infant can sit leaning forward on his hands. He bounces actively when made to stand. He laughs aloud and becomes concerned when the mother moves away. What is his most likely age?
(a) 12 weeks
(b) 16 weeks
(c) 22 weeks
(d) 28 weeks

**83.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Association with hepatomegaly)** | | **List II (Presentation)** |
|---|---|---|---|
| A | Skin lesion | 1 | Histiocytosis |
| B | Engorged neck veins | 2 | Galactosemia |
| C | Cataract | 3 | Toxoplasmosis |
| D | Hydrocephalus | 4 | Constrictive pericarditis |

(a) A-1, B-4, C-2, D-3
(b) A-1, B-4, C-2, D-3
(c) A-3, B-4, C-2, D-1
(d) A-4, B-3, C-2, D-1

**84.** The most common type of juvenile rheumatoid arthritis is:
(a) Rheumatoid factor positive polyarticular
(b) Rheumatoid factor negative polyarticular
(c) Pauciarticular type
(d) Systemic onset type

**85.** An 8 year old boy presented to the Emergency Department on the fourth day of fever during a dengue epidemic. He had a mild erythematous rash on his body and no bleeding from any site. His BP was 110/70 mmHg and pulse was 94/minute. Hess test was positive. Dengue serology report is awaited. Platelet count is 30,000/cm$^3$ and PCV: 36%. What is the treatment of choice?
(a) Plenty of oral/ IV fluids and observation
(b) Emergency platelet transfusion to raise platelets above 50,000/cm$^3$
(c) IV anti-D immune globulin
(d) Give antipyretic and wait for dengue serology report

**86.** Match List I with List II and select the correct answer using the Code given below the lists:

| | **List I (Antidote)** | | **List II (Poison/ Drug)** |
|---|---|---|---|
| A | Calcium sodium edetate | 1 | Cyanide |
| B | Sodium nitrite | 2 | Nitrobenzene |
| C | Methylene blue | 3 | Lead |
| D | Atropine | 4 | Organophosphate |

(a) A-4, B-1, C-2, D-3
(b) A-1, B-4, C-2, D-3
(c) A-3, B-4, C-2, D-1
(d) A-3, B-1, C-2, D-4

**87.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Diseases)** | | **List II (Laboratory parameters)** |
|---|---|---|---|
| A | Thalassemia major | 1 | Increased serum iron, decreased TIBC, increased serum ferritin |
| B | Iron deficiency anaemia | 2 | Decreased serum iron, increased TIBC, decreased serum ferritin |
| C | Nephrotic syndrome | 3 | Decreased serum iron, decreased TIBC, increased serum ferritin |
| D | Acute iron poisoning | 4 | Increased serum iron, normal TIBC, normal serum ferritin |

(a) A-4, B-1, C-2, D-3
(b) A-1, B-2, C-2, D-3
(c) A-1, B-2, C-3, D-4
(d) A-4, B-3, C-2, D-1

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**34.** The following conditions can cause interstitial nephritis except:
(a) Infections
(b) Hepatorenal syndrome
(c) Lymphoma
(d) Sarcoidosis

**35.** Which of the following are characteristics features of tuberculoid leprosy?
1. Type 2 lepra reaction
2. A few lesions with well demarcated edges
3. Early and marked nerve damage
4. Tendency to heal spontaneously
Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1 and 4
(d) 2 and 3 only

**36.** Which of the following immunological reactions occurs in Goodpasture syndrome?
(a) Type I atopy
(b) Type II cytotoxic
(c) Type III immune complex
(d) Type IV cell mediation

**37.** Regarding erythema nodosum leprosum, which one of the following is not correct?
(a) It is usually during initiation of treatment
(b) Tender subcutaneous nodules observed
(c) Lymphadenopathy is common
(d) Ophthalmic involvement can occur

**38.** The most common microorganism known to cause tropical pyomyositis is:
(a) Streptococcus viridans
(b) Staphylococcus albus
(c) Klebsiella pneumonia
(d) Staphylococcus aureus

**39.** Following are the common features of Cushing's syndrome except:
(a) Truncal obesity
(b) Osteoporosis
(c) Distal myopathy
(d) Glucose intolerance

**40.** A farmer presents with history of fever and chills, severe bodyache, headache, conjuctival suffusion and jaundice. He has severe muscle tenderness, leukocytosis and mild uraemia. The most likely diagnosis would be:
(a) Leptospirosis
(b) Typhoid fever
(c) Typhus
(d) Viral hepatitis

**41.** Consider the following statements regarding falciparum malaria:
1. The mortality rises steeply when the proportion of infected erythrocytes increases above 3 percent.
2. The patient may develop hypoglycemia even when not treated with quinine.
Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**42.** 'Loeffler's syndrome' is characterized by:
(a) Transient, migratory pulmonary infiltrations
(b) Fibrosis in the pulmonary apices
(c) Fibrosis in the base of one or both lungs
(d) Miliary mottling

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**43.** Keyboard operators and typists are especially susceptible to injury of the
(a) Axillary nerve
(b) Median nerve
(c) Ulnar nerve
(d) Radial nerve

**44.** Which of the following is not a clinical feature of Kwashiorkor?
(a) Bipedal oedema
(b) Visible severe wasting
(c) Low serum albumin
(d) Moon face

2. study the regulatory regions in the genome outside the gene that controls expression of genes.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**94.** Besides the Sunderbans, mangrove forests are also to be found in
1. Bhitarkanika
2. Godavari delta
3. Pichavaram
4. Kaveri (Cauvery) delta

Select the correct answer using the code given below:
(a) 1, 2 and 4 only
(b) 1, 3 and 4 only
(c) 2 and 3 only
(d) 1, 2, 3 and 4

**95.** Which of the following statements is not correct?
(a) In the preparation of vinegar in the households, dried fruits can be used.
(b) Vinegar making involves fermentation by yeast.
(c) Vinegar is actually acetic acid.
(d) A fruit juice containing 5% or more sugar cannot be made into vinegar in the households.

**96.** Which one of the following viruses was exploited to create genetically engineered virus 'onyx-15', an oncolytic virus to target and eliminate cancer cells?
(a) Parvovirus
(b) Adenovirus
(c) Pox virus
(d) Herpes simplex virus

**97.** Which one of the following is not included in the Preamble of the Constitution of India?
(a) Secular Republic
(b) Socialist Republic
(c) Federal Republic
(d) Democratic Republic

**98.** Consider the following milk borne diseases:
1. Brucellosis
2. Listeriosis
3. Salmonellosis

Which of the above can be controlled by pasteurization?
(a) 1 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3

**99.** Who of the following is the Chairman of Rajya Sabha?
(a) The Prime Minister
(b) The Speaker of Lok Sabha
(c) The Vice President of India
(d) The President of India

**100.** Consider the following statements:
1. Fly ash can be added to agricultural soil to enhance its water holding capacity.
2. Fly ash can be used in the manufacture of bricks and blocks for construction purposes.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**101.** 'Ecological niche' refers to the
(a) amount of autotrophs available for consumption of the grazing population.
(b) relationship of an animal with the surrounding animals.
(c) position of an animal with reference to its species composition.
(d) positional and functional relationship of an organism in an ecosystem.

**102.** Which one of the following is not required for the formation of photochemical smog?
(a) Oxygen
(b) Oxides of nitrogen
(c) Carbon monoxide

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# PAPER 2015 ANSWERS

1. (d) The treatment includes intravenous diltiazem

In right ventricular myocardial infarction, maintaining adequate preload is crucial because the right ventricle depends more on venous return. Agents such as intravenous diltiazem reduce heart rate and can lower blood pressure, thereby decreasing preload, which can worsen hemodynamics in right ventricular infarction. By contrast, fluid administration often helps support the failing right ventricle. The other statements accurately reflect that right ventricular infarcts commonly accompany inferior wall MIs, show right precordial ST elevations, and may have a serious prognosis.

2. (c) Systolic murmur at apex

Atrial myxomas often present with constitutional symptoms (fever, weight loss) and can produce embolic phenomena (including subungual splinter hemorrhages). On auscultation, a classic "tumour plop" (a diastolic sound) is more commonly heard when the myxoma prolapses across the mitral valve. While an obstructive murmur can occasionally occur, it is typically diastolic rather than systolic at the apex. Hence, a "systolic murmur at apex" is least characteristic of an atrial myxoma and is therefore the "except" statement.

3. (b) A-2 B-3 C-4 D-1

A wide, fixed splitting of the second heart sound (A) is a classic finding in atrial septal defect (2). A continuous machinery murmur (B) is pathognomonic of patent ductus arteriosus (3). Muffled heart sounds (C) point toward pericardial effusion (4). A wide and variable split in the second heart sound (D) is typically associated with conditions like pulmonary hypertension (1), where altered right-sided pressures affect pulmonary valve closure. Matching these auscultatory findings to their respective conditions gives the correct code of 2, 3, 4, 1.

4. (d) A-3 B-4 C-2 D-1

Amiodarone (A) is commonly used to treat ventricular tachycardia (3). Adenosine (B) terminates paroxysmal supraventricular tachycardia (4) by transiently blocking AV nodal conduction. Digoxin (C) helps in rate control for atrial fibrillation (2) by decreasing AV nodal conduction. Atropine (D) counteracts excessive vagal tone in certain types of heart block, including advanced A-V block (1). Thus, the best match is A→3, B→4, C→2, D→1.

5. (d) Lung abscess formation is very uncommon

Klebsiella pneumonia typically affects the upper lobes and is known for its thick, bloody ("currant jelly") sputum. It can be complicated by pneumatoceles, empyema, and necrotizing infections. In fact, Klebsiella is one of the more common bacterial causes of lung abscesses. Therefore, stating that "Lung abscess formation is very uncommon" is incorrect. Abscesses do occur with Klebsiella, making option (d) the "except" statement.

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6. (c) A-4 B-3 C-2 D-1

Bagassosis (A) is caused by inhaling sugarcane dust (4). Byssinosis (B) arises from cotton exposure (3). Farmer's lung (C) involves inhaling moldy hay (2), with thermophilic actinomycetes as common antigens. Wood worker's lung (D) is associated with exposure to oak, cedar, or pine dust (1). Therefore, A→4, B→3, C→2, D→1 is the correct sequence.

7. (b) Primary biliary cirrhosis

Pulmonary fibrosis is strongly linked to several occupational and systemic disorders: Coal miners' lung (pneumoconiosis) and asbestosis (from asbestos exposure) are well-known causes. Ankylosing spondylitis can also involve the upper lobes, sometimes leading to fibrocavitary changes. Primary biliary cirrhosis is primarily

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(d) 1, 2 and 3

**112.** Which one of the following represents the correct sequence of vegetational transitions with increasing latitude?
(a) Rain forest – deciduous forest – coniferous forest
(b) Rain forest – coniferous forest – deciduous forest
(c) Deciduous forest – rain forest – coniferous forest
(d) Coniferous forest – rain forest – deciduous forest

**113.** Consider the following statements:
1. LED lamps have shorter life span as compared to incandescent bulbs.
2. LED lamps are made by using semi-conductor material.
3. LED lamps are more expensive than conventional sources of lighting.

Which of the statements given above are correct?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**114.** In India, ecologists consider 'sacred groves' very valuable because of their role in
(a) meeting fuelwood and medicinal needs of local people
(b) protection of biodiversity that has vanished from surrounding areas due to exploitation by man
(c) stabilization of climate and reduction of global warming
(d) socio-cultural and religious interactions among traditional communities of different regions

**115.** The 'Cry1Ac', often in news is
(a) a gene that enables some crop plants to fight pests
(b) another strain of virus responsible for bird-flue that occurred in China
(c) a gene used in making the transgenic rice known as 'golden rice'
(d) None of these

**116.** Excessive accumulation of nitrates in water bodies can result in:
1. Proliferation of biodiversity
2. Algal blooms
3. Acidification

Select the correct answer using the code given below:
(a) 1 only
(b) 2 and 3 only
(c) 2 only
(d) 1, 2 and 3

**117.** According to the United Nations Convention on the Rights of the Child, which of the following is/are the right/rights of the children?
1. Right to expression
2. Right to recreation
3. Right to name and nationality

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 3 only
(c) 1, 2 and 3
(d) None of these is a Right of the children

**118.** In the context of genetic engineering, which of the following statements is/are correct?
1. Vector mediated recombinant gene transfer can be done from one eukaryote to another eukaryote only.
2. Vector mediated recombinant gene transfer can be done from animal cell to plant cell.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**119.** What is the importance of a plant named jatropha that is frequently in the news?
(a) It is a wild variety of rice of North-east India rich in vitamin A and iron.
(b) It is a bio-diesel yielding plant that can grow well in areas of low rainfall.
(c) It is a genetically modified pest-resistant potato plant.

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(d) Sunlight

**103.** The 'Nirbhaya Fund' set up by the Government of India is for:
(a) Ensuring the safety of women
(b) Promoting the financial literacy of rural poor
(c) Promoting Self-Help Groups of women
(d) Providing free education

**104.** What is 'Solar Impulse 2', which was recently in the news?
(a) A Central Government sponsored scheme to promote the production of solar energy
(b) A spacecraft sent by NASA to study a comet moving towards Sun
(c) A project of India in collaboration with NASA to study the impact of solar flares on Earth
(d) A round-the-world flight powered only by the solar energy

**105.** Consider the following statements:
1. In food preservation by irradiation, ionising rays are used.
2. Irradiation does not affect the colour, odour, taste, pH and levels of vitamin contents in the foods.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**106.** Kutch (in Gujarat) has the existence of a large number of salt pans. What could be the most valid reason/reasons for this?
1. Existence of creeks and mudflats
2. Higher evaporation rate
3. Presence of vast intertidal zone

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

**107.** Most of the ozone in the atmosphere is concentrated in the:
(a) Ionosphere
(b) Mesosphere
(c) Stratosphere
(d) Troposphere

**108.** Consider the following:
1. Lactic acid
2. Sorbic acid
3. Sulphurous acid

Which of the above are food preservatives?
(a) 1 and 2 only
(b) 2 and 3 only
(c) None of these
(d) 1, 2 and 3

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**109.** With reference to 'DNA Microarray' technology, which of the following statements is/are correct?
1. It helps in identifying the genes involved in a disease by comparing the gene expressions between the tissues from a healthy and an infected person.
2. It allows visualizing the activity of hundreds of genes simultaneously.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**110.** Artemisinin is a drug derived from a:
(a) Plant
(b) Fungus
(c) Rock
(d) Blue-green alga

**111.** Which of the following can be used to extract heavy metals from water?
1. Aluminium oxide
2. Cellulose
3. Silica

Select the correct answer using the code given below:
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only

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RBCs vulnerable to oxidative stress; this primarily causes hemolytic anemia without typically affecting white cells or platelets. Hence, it does not cause pancytopenia.

**29.** (b) Beta blocker

Growth hormone commonly causes fluid retention and soft-tissue swelling. Anabolic steroids often lead to sodium and water retention, increasing edema risk. Calcium-channel blockers, especially dihydropyridines (e.g., amlodipine), can produce peripheral edema via vasodilatation and altered fluid dynamics in the microcirculation. By contrast, beta-blockers are not classic causes of fluid retention or peripheral edema (though they might mask certain signs of hypoglycemia or affect lipid profiles). Therefore, among the listed options, beta-blockers are least likely to cause edema.

**30.** (a) Cerebral oedema

Prolonged or severe hypoglycemia can result in neuronal injury that may not rapidly reverse even when blood glucose normalizes. One feared outcome is cerebral edema, especially in cases of overly rapid correction or extremely low glucose levels maintained for too long. This swelling in the brain parenchyma can lead to persistent coma, permanent neurological damage, and high mortality. While other neurological sequelae (e.g., infarcts, seizures) can occur, cerebral edema stands out for its grave prognosis.

**31.** (c) Primary hyperparathyroidism

Primary hyperparathyroidism leads to excessive parathyroid hormone (PTH) secretion, causing hypercalcemia. Common clinical manifestations include "stones, bones, abdominal groans, and psychic moans"—where "stones" refers to renal calculi, "abdominal groans" can manifest as peptic ulcers or pancreatitis, and hypertension is also associated. Milk-alkali syndrome and hypervitaminosis D can similarly elevate calcium, but do not as typically present with this classic triad. Tubulointerstitial disease has different pathophysiology and clinical profile.

**32.** (d) A-4, B-2, C-1, D-3

1. A. Hyperchylomicronemia (Type I) typically shows very high triglycerides (often >1000 mg/dL).
2. B. Hyperbetalipoproteinemia (Type IIa) presents with LDL elevation and is known for tendon xanthomas.
3. C. Type III hyperlipoproteinemia (dysbetalipoproteinemia) often features palmar crease (palmar/plantar) xanthomas.
4. D. Familial LPL deficiency leads to severe chylomicron accumulation with classic eruptive xanthomas (often on buttocks/extensor surfaces).

Hence, the code that best fits is A→4, B→2, C→1, D→3.

**33.** (c) Descending motor paralysis with preservation of tendon reflexes and absent sensation

Polio typically causes an initial mild viral prodrome which can progress to meningitic symptoms and often asymmetric flaccid paralysis with diminished or absent deep tendon reflexes. Paralysis usually follows an "ascending" or patchy pattern rather than purely descending (a hallmark of some other conditions, e.g., botulism). Additionally, polio mainly affects motor neurons, resulting in reduced reflexes and muscle weakness, not purely sensory loss. Hence, (c) describing descending paralysis with preserved reflexes and lost sensation is least characteristic of poliovirus.

**34.** (b) Hepatorenal syndrome

Acute or chronic interstitial nephritis can arise from infections (e.g., certain viral, bacterial, or parasitic causes), infiltrative disorders like lymphoma, or granulomatous conditions such as sarcoidosis. These can directly involve the renal interstitium, triggering inflammatory or granulomatous changes. In contrast, hepatorenal syndrome occurs with advanced liver disease and portal hypertension; it is characterized by marked renal vasoconstriction and reduced GFR—but does not primarily reflect interstitial inflammatory changes in the kidneys.

**35.** (b) 2, 3 and 4

Tuberculoid leprosy typically presents with few hypopigmented skin patches having sharp

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an autoimmune liver disease and is not typically associated with progressive fibrotic changes in the lung. Therefore, among the listed options, primary biliary cirrhosis is least likely to show a direct association with pulmonary fibrosis.

8. (d) 1, 2 and 3

All three listed findings indicate severe acute asthma. A pulse rate above 110/min (1) reflects significant respiratory distress. Pulsus paradoxus (2)—an exaggerated fall in systolic blood pressure during inspiration—is a hallmark of severe airway obstruction. Inability to speak in full sentences (3) suggests markedly reduced airway flow and significant respiratory compromise. Hence all (1), (2), and (3) are features of severity in the immediate assessment of acute severe asthma.

9. (a) Sarcoidosis

Cavitation in the lungs commonly occurs with infections like tuberculosis (b) and histoplasmosis (d), as well as certain malignancies such as squamous cell carcinoma of the lung (c). Sarcoidosis (a) usually presents with non-caseating granulomas and bilateral hilar lymphadenopathy rather than cavitary lesions; while rare cavitation can sometimes occur, it is not a characteristic feature. Thus, "Sarcoidosis" is the best choice for "except" among the listed causes of cavitation.

10. (a) Rifampicin 450 mg + Isoniazid 300 mg + Pyrazinamide 1500 mg

For a 40 kg adult with pulmonary tuberculosis, standard weight-based dosing under many TB treatment guidelines is: Rifampicin 450 mg (since weight is under 50 kg), Isoniazid 300 mg (commonly used for most adults >30 kg), and Pyrazinamide 1500 mg (typical for the 40–54 kg range). This aligns with option (a). Although precise mg/kg calculations vary among protocols, 450 mg of Rifampicin, 300 mg of Isoniazid, and around 1500 mg of Pyrazinamide is conventionally recommended for that weight category.

11. (b) Pre-systolic accentuation

Pre-systolic accentuation of the diastolic murmur in mitral stenosis depends on effective atrial contraction pushing blood through the stenosed mitral valve just before systole. In atrial fibrillation, the atria do not contract effectively (they fibrillate), so this accentuation does not occur. The mid-diastolic murmur, variable first heart sound, and loud $P_2$ (due to pulmonary hypertension) can still be present, but the specific pre-systolic "boost" is lost.

12. (d) Intravenous aminophylline

Immediate management of acute severe asthma emphasizes high-flow oxygen (to correct hypoxia), high-dose inhaled $\beta_2$ agonists (to relieve bronchospasm), and systemic corticosteroids (to reduce airway inflammation). Intravenous aminophylline is not a first-line immediate therapy and is usually reserved for cases unresponsive to initial measures. Its benefit over optimal inhaled bronchodilators and steroids is limited, and side effects can be significant. Therefore, IV aminophylline is not typically recommended right away.

13. (a) $pCO_2$ 38 mmHg, and $pO_2$ 50 mmHg

Type 2 respiratory failure is characterized by hypercapnia (elevated arterial $pCO_2$ >45 mmHg) and hypoxemia (low $pO_2$). A $pCO_2$ of 38 mmHg with a $pO_2$ of 50 mmHg (option a) indicates hypoxemia without hypercapnia, which matches type 1 respiratory failure. Papilloedema and asterixis can occur in hypercapnic states due to raised intracranial pressure or altered sensorium. A $pCO_2$ of 68 mmHg with a $pO_2$ of 50 mmHg clearly represents type 2 respiratory failure.

14. (b) Calcium channel blocker

Mainstays of treatment for dilated cardiomyopathy and systolic heart failure include beta-blockers (to reduce heart rate and control remodeling), ACE inhibitors (afterload reduction), and diuretics/aldosterone antagonists (like spironolactone) to manage volume overload. Non-dihydropyridine calcium channel blockers (e.g., verapamil, diltiazem) generally have negative inotropic effects and may worsen systolic dysfunction. They are therefore not routinely used in dilated cardiomyopathy

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unless there is a specific indication like uncontrollable supraventricular arrhythmias.

**15.** (d) 1, 2 and 4

Zollinger Ellison syndrome (ZES) involves a gastrin-secreting tumor (gastrinoma) of the pancreas or duodenum, leading to unregulated gastrin release (2), aggressive peptic ulcer disease (1), and frequent diarrhea (4) because of the high acid load. It is not a "beta islet cell" tumor (3); beta cells secrete insulin, whereas ZES involves enteroendocrine G-cells. Up to half of patients with ZES experience diarrhea due to excess acid overwhelming the intestine's absorptive capacity.

**16.** (a) Leptospirosis

Systemic lupus erythematosus (SLE) frequently presents with a "butterfly" malar rash and discoid lesions. Hepatitis B can lead to serum sickness–like skin manifestations. Infectious mononucleosis is known to cause maculopapular rashes, particularly after certain antibiotics (e.g., ampicillin). Leptospirosis, however, does not typically begin with or feature a characteristic primary skin lesion; while nonspecific rashes can occur in some cases, they are not a classic or defining primary dermatologic sign of the disease.

**17.** (d) Eosinophilia

Hypersensitivity pneumonitis (also called extrinsic allergic alveolitis) is an immune-mediated inflammatory condition of the lung parenchyma, often triggered by inhaled organic dusts. While clinical features can include elevated inflammatory markers (e.g., CRP), normal or near-normal chest X-rays (especially early on), and confirmatory changes on lung biopsy, peripheral eosinophilia is not typical. Unlike eosinophilic pneumonias, hypersensitivity pneumonitis is usually dominated by lymphocytic and granulomatous inflammation rather than significant eosinophil involvement.

**18.** (b) 2, 3 and 4 only

Duodenal ulcers most commonly occur in the first part (the duodenal bulb), not the second part, making statement 1 incorrect. H. pylori infection and NSAID use (2) indeed account for most duodenal ulcers. True malignant duodenal ulcers (3) are very rare compared to gastric ulcers. Finally, targeted H. pylori eradication therapy (4) has dramatically lowered ulcer recurrence rates. Hence, statements 2, 3, and 4 are correct, while statement 1 is not.

**19.** (b) Argentaffin cells of small intestine

Carcinoid tumors most often originate from enterochromaffin (argentaffin or Kulchitsky) cells in the gastrointestinal tract, especially in the appendix and small intestine. These neuroendocrine cells can secrete serotonin and various vasoactive substances, leading to the classic "carcinoid syndrome" if metastatic spread allows excess hormones into the systemic circulation. G cells in the pancreas typically secrete gastrin (Zollinger-Ellison syndrome), and pancreatic endocrine tumors (insulinoma, glucagonoma) are distinct entities.

**20.** (c) HBe Ag

HBeAg (hepatitis B "e" antigen) reflects active replication of the virus and high infectivity. Its presence typically indicates that the virus is replicating vigorously in the liver. HBsAg (surface antigen) shows that infection is present (acute or chronic), but it does not specifically confirm high replication. Anti-HBs is the protective antibody usually seen after successful vaccination or resolution of infection. Anti-HBc signals exposure to the virus (IgM anti-HBc in acute infection; IgG anti-HBc in past or chronic infection).

**21.** (b) Hypoadrenalism

Polyuria is abnormally high urine output. Chronic renal failure can lead to a reduced concentrating ability and a "polyuric phase." Hypercalcemia causes nephrogenic diabetes insipidus–like effects, also resulting in polyuria. Lithium therapy impairs the kidney's responsiveness to ADH, promoting nephrogenic diabetes insipidus. However, hypoadrenalism (Addison's disease) typically features hyponatremia, volume depletion, and

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not a sustained polyuric state. While electrolyte imbalances do occur in adrenal insufficiency, classic large-volume polyuria is far more characteristic of the other three conditions.

**22.** (d) Renal cell carcinoma is a frequent association

Adult polycystic kidney disease (APKD) is an autosomal dominant disorder (often with high but not always strict 100% clinical penetrance). It is well known for extrarenal manifestations such as hepatic cysts and berry aneurysms, which increase the risk of subarachnoid hemorrhage. Although there may be a slightly increased risk of renal tumors, renal cell carcinoma is not considered a frequent or hallmark association compared to cystic growth and intracranial aneurysms. Thus, (d) is the statement that is not correct.

**23.** (c) Hyperthyroidism

Chronic renal failure leads to phosphate retention, reduced $1,25(OH)_2$ vitamin $D_3$ production, and secondary hyperparathyroidism (a) to compensate for low calcium. Bone disorders, including osteomalacia (b) from low active vitamin D levels, are part of renal osteodystrophy. However, hyperthyroidism (c) is not a typical direct consequence of chronic renal failure. Patients with end-stage kidney disease often have hypothyroid or normal thyroid function tests, but overt hyperthyroidism is not a standard feature.

**24.** (c) Migraine

"Dazzling, enlarging visual phenomena" that last minutes and temporarily obstruct vision are classical of migraine aura (often termed scintillating scotomas or fortification spectra). These aura symptoms typically precede or accompany a migraine headache and can resolve spontaneously. By contrast, acute angle-closure glaucoma causes severe ocular pain and blurred vision, retinal detachment presents with sudden loss of vision ("curtain coming down"), and intumescent cataract involves lens swelling and progressive blurred vision rather than transient flashing phenomena.

**25.** (c) A-2 B-1 C-4 D-3

Macrocytosis can occur in hypothyroidism (A→2), whereas microcytosis typically points to iron deficiency (B→1). Hemolytic anemia can be induced by certain drugs such as alpha methyldopa (C→4) through autoimmune mechanisms. Finally, megaloblastic anemia is classically linked to vitamin $B_{12}$ or folate deficiency (D→3). Thus, the correct mapping is A→2, B→1, C→4, and D→3.

**26.** (d) Penicillin

G6PD deficiency predisposes to oxidative stress hemolysis. Known triggers include certain antimalarials (e.g., primaquine), sulfonamides, some analgesics (e.g., phenacetin), and others that generate oxidative metabolites within red blood cells. Penicillin is not classically implicated in causing hemolysis in G6PD-deficient individuals. By contrast, probenecid—though less commonly discussed than primaquine or sulfa drugs—can exacerbate oxidative stress in susceptible RBCs. Hence, penicillin is the safest among these listed choices.

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**27.** (c) A-4 B-1 C-2 D-3

1. A. Microcytic, hypochromic RBCs are classic for iron-deficiency anaemia (4).
2. B. Macrocytic RBCs (though typically "macro-oval" rather than "hypochromic") align best with vitamin $B_{12}$ deficiency anaemia (1).
3. C. A large number of erythroblasts across stages are seen in thalassemia major (2) due to increased ineffective erythropoiesis.
4. D. A low reticulocyte count commonly characterizes aplastic anaemia (3), reflecting poor marrow output. Thus, A→4, B→1, C→2, D→3 is correct.

**28.** (d) Haemolysis from G6PD enzyme deficiency

Pancytopenia means simultaneous reduction of red cells, white cells, and platelets. In hypersplenism, the spleen sequesters or accelerates the removal of multiple cell lines, causing pancytopenia. In aplastic anaemia, marrow failure reduces all cell lines. Cancer infiltrating bone marrow also compromises the production of RBCs, WBCs, and platelets. However, G6PD deficiency selectively renders

(d) It is a highly drought-resistant wild variety of pearl millet adopted for cultivation in dry areas of South India.

**120.** Gene silencing means a gene which would be expressed under normal circumstances is switched off by cell machinery. Which one of the following cellular components is not involved in gene silencing?

(a) Micro RNA
(b) Double stranded RNA
(c) Ribosomal RNA
(d) Si RNA

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borders (2). It features strong cell-mediated immunity, causing significant nerve involvement early (3) and often leading to well-defined anesthetic lesions. Because the host immune response is robust, tuberculoid lesions may partially or completely resolve spontaneously (4). Conversely, Type 2 lepra reaction (erythema nodosum leprosum) usually occurs in lepromatous or borderline lepromatous disease. Hence, 2, 3, and 4 are correct for tuberculoid leprosy, while 1 is not.

**36.** (b) Type II cytotoxic

Goodpasture syndrome involves autoantibodies directed against the glomerular and alveolar basement membrane (anti-GBM antibodies). This is a classic example of type II hypersensitivity, in which antibodies bind to antigens on cell surfaces or extracellular matrix, directly causing tissue injury. Type I involves IgE-mediated atopy, type III involves immune complex deposition, and type IV is T-cell–mediated. In Goodpasture's, linear deposition of IgG on basement membranes confirms the type II mechanism.

**37.** (a) It is usually during initiation of treatment

Erythema nodosum leprosum (ENL) is a type 2 lepra reaction chiefly seen in borderline lepromatous or lepromatous leprosy. It features painful, tender subcutaneous nodules, systemic signs (fever, malaise), lymphadenopathy, and possible eye involvement. While ENL can be precipitated or worsened by starting multidrug therapy (due to increased immune response), it also occurs spontaneously in untreated disease. Hence describing it as "usually" during initiation of treatment is not entirely accurate - ENL is not confined solely to the start of therapy.

**38.** (d) Staphylococcus aureus

Tropical pyomyositis is a deep muscle infection leading to abscess formation, often seen in humid climates. Staphylococcus aureus is by far the most frequently implicated organism, accounting for the majority of cases. Streptococci and other bacteria may occasionally be involved, but S. aureus remains the classic cause given its virulence, propensity for hematogenous spread, and ability to survive within muscle tissue.

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**39.** (c) Distal myopathy

Cushing's syndrome, arising from excess glucocorticoids, characteristically presents with truncal obesity, buffalo hump, and moon facies. It also contributes to bone demineralization (osteoporosis) and hyperglycemia or glucose intolerance. Muscle weakness in Cushing's predominantly involves the proximal muscle groups (e.g., thighs, hips, shoulders). Distal myopathy is not typical; patients often complain of difficulty climbing stairs or rising from a chair—classic signs of proximal myopathy—rather than distal muscle weakness.

**40.** (a) Leptospirosis

Leptospirosis (particularly its severe Weil's syndrome form) presents with high fever, headache, jaundice, renal impairment, and striking muscle tenderness (especially in the calves). Conjunctival suffusion (redness without exudate) is a hallmark finding. Leukocytosis and mild uremia reflect multiorgan involvement. Typhoid fever tends to feature step-ladder fevers and abdominal symptoms, typhus usually shows rash and characteristic epidemiology, and viral hepatitis rarely causes such pronounced muscle pain or conjunctival suffusion.

**41.** (c) Both 1 and 2

In falciparum malaria, a heavy parasitic load correlates with severe disease, and mortality indeed increases sharply beyond a certain parasitemia threshold (often cited around 2–5%). Secondly, hypoglycemia can result from the parasite's high glucose consumption and from altered host metabolism. While quinine or other antimalarials can exacerbate hypoglycemia via hyperinsulinemic effects, even untreated falciparum malaria may lead to low blood sugar due to the severe metabolic demands of widespread parasitic infection.

**42.** (a) Transient, migratory pulmonary infiltrations

Loeffler's syndrome is a transient respiratory condition often linked to parasitic infections (e.g., Ascaris lumbricoides) or drugs. It features fleeting pulmonary infiltrates visible on chest imaging and an associated peripheral

Aspirin poisoning often still benefits from gastric decontamination if the patient presents promptly. Thus, the only universally recognized contraindications for pediatric gastric lavage among the listed items are kerosene (2) and corrosives (3).

**72.** (b) 1 and 3 only

Classic infantile hypertrophic pyloric stenosis presents around 2–8 weeks of age with progressive, non-bilious projectile vomiting. On examination, visible gastric peristalsis (1) may be seen as waves moving from left to right across the epigastrium. A firm, "olive-like" palpable mass (3) in the right upper quadrant is another hallmark. Because the pyloric obstruction is proximal to the bile duct, the vomitus is not bilious (2), and melena (4) is not typical.

**73.** (c) Before six months of age

Large VSDs can lead to significant left-to-right shunting and potentially irreparable pulmonary vascular disease (Eisenmenger syndrome) if not corrected early. Current pediatric cardiology guidelines recommend closing large VSDs as soon as they become hemodynamically burdensome, often before 6 months to prevent permanent changes in the pulmonary vasculature. "School going age" (option a) is too late, "only if CHF is uncontrolled" (option b) risks pulmonary hypertension, and "soon after birth" (option d) is not usually mandatory unless severe heart failure occurs immediately.

**74.** (a) Wasted, stunted

Weight-for-height (a measure of wasting) here is 7 kg vs. an expected 9 kg, which is about 78% of the reference—indicative of wasting but not necessarily <70% (severe wasting). Height-for-age (a measure of stunting) is 74 cm vs. an expected 86 cm (~86%), consistent with mild-to-moderate stunting but not below a threshold of ~85% or 3 SD for severe stunting. Thus, the child qualifies as both wasted and stunted, but not severely in either category by WHO criteria.

**75.** (a) Calorie 150-220 kcal/kg/d; protein 4-6 g/kg/d

In severe acute malnutrition (SAM), high "catch-up" intake of both calories and protein is required to foster rapid weight gain and recovery. Guidelines often suggest about 150–220 kcal/kg/day and 4–6 g protein/kg/day to support tissue building and immune restoration, which exceeds normal maintenance requirements. Lower ranges (125–175 kcal/kg/d) may not be sufficient for true catch-up, while offering only 2–4 g/kg/d protein can hinder adequate repair.

**76.** (a) Decrease in parathyroid hormone level

In vitamin D deficiency, less calcium is absorbed from the gut (b). This hypocalcemia increases parathyroid hormone (PTH) secretion—so PTH typically rises, not decreases. Elevated PTH then promotes phosphate excretion in the kidneys, i.e., lowers serum phosphate (so there is effectively a "decrease in renal phosphate reabsorption," reflected in (c) being correct). Increased alkaline phosphatase (d) occurs from active osteoblasts attempting to repair poorly mineralized bone. Therefore, a drop in PTH is not a feature.

**77.** (d) Juvenile rheumatoid arthritis

Prolonged fever with anemia and petechiae typically indicates a process involving bone marrow suppression, infiltration, or chronic infection with low platelet count. Acute leukemia commonly presents with fever, anemia, thrombocytopenia (petechiae). Prolonged tuberculosis or typhoid fever can produce significant systemic inflammation and sometimes mild cytopenias. By contrast, juvenile rheumatoid arthritis (JRA) may cause fever and anemia of chronic disease, but it does not commonly lead to platelet counts low enough to produce petechiae. Hence (d) is the least likely.

**78.** (a) Philadelphia chromosome is negative

Juvenile myelomonocytic leukemia (a subtype of "juvenile CML") is typically Philadelphia chromosome–negative, whereas adult-type CML usually shows the Ph chromosome (t(9;22)). Thrombocytopenia may be common, not rare, in juvenile variants. Prognosis in children with juvenile forms tends to be more variable and can be poor unless appropriately managed (hematopoietic stem cell transplantation is often required). Single-agent cytoreductive therapies

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characterized by motoric immobility, mutism, or peculiar posturing. Thus, all three listed possibilities (1, 2, and 3) can be present in schizophrenia.

**50.** (d) To prevent depression in unipolar disorders

Lithium is a mood stabilizer used both to treat acute mania (a) and to help prevent recurrent manic episodes (b). In bipolar disorder, it also reduces the risk of depressive relapses (c). However, for unipolar (major) depression prophylaxis, lithium is not the standard sole agent—common long-term therapies include antidepressants and sometimes psychotherapy. Lithium's prophylactic role primarily targets the manic and depressive phases of bipolar illness.

**51.** (b) Irritable bowel syndrome

Protein-losing enteropathy involves excessive loss of plasma proteins through the gut. It can happen in inflammatory bowel conditions like ulcerative colitis (a), where mucosal damage leads to leakage of proteins, and in celiac disease (c) due to severe mucosal atrophy and malabsorption. Intestinal lymphoma (d) can erode or infiltrate the intestinal wall, also causing protein loss. By contrast, irritable bowel syndrome (b) is a functional disorder without significant mucosal inflammation or ulceration; it does not typically cause protein loss.

**52.** (a) Lateral gaze palsy

Foville syndrome typically stems from a lesion in the dorsal pons affecting the abducens nucleus or paramedian pontine reticular formation (PPRF), along with the facial nerve fascicle. This leads to an ipsilateral horizontal (lateral) gaze palsy—i.e., inability to look toward the side of the lesion—combined with ipsilateral facial weakness. A pure sixth nerve palsy (choice b) affects only one eye's abduction, whereas "lateral gaze palsy" implies a conjugate horizontal gaze defect. Hence, (a) best fits Foville syndrome.

**53.** (d) Livedo reticularis

Behçet's syndrome is characterized by recurrent, painful oral and genital ulcers, uveitis, and frequent skin manifestations such as erythema nodosum–like lesions. Polyarthritis can also occur. Livedo reticularis, a netlike purplish skin mottling often associated with conditions like antiphospholipid syndrome or Sneddon's syndrome, is not a classic feature of Behçet's. Hence (d) is the "except" feature among otherwise characteristic findings of Behçet's.

**54.** (a) A-4, B-1, C-2, D-3

- Phenytoin (A) often causes cerebellar/vestibular toxicity (ataxia, nystagmus), i.e., cerebellar dysfunction (4).

1. Para-aminosalicylic acid (B) can lead to goiter and hypothyroidism (1).
2. Rifampicin (C) is known for hepatotoxic potential (2).
3. Streptomycin (D), an aminoglycoside, may damage the eighth cranial nerve, causing ototoxicity (3).

Thus, A→4, B→1, C→2, D→3 fits best.

**55.** (d) A-4, B-3, C-2, D-1

Pemphigus vulgaris is classically associated with a positive Nikolsky sign (4). Psoriasis demonstrates Koebner's phenomenon (3), in which new lesions appear on sites of trauma. Turner syndrome often manifests shortened metacarpals or overall brachydactyly (2). Primary hyperparathyroidism can produce acro-osteolysis (1), a resorption of distal phalanges linked to excessive parathyroid hormone. Thus, A→4, B→3, C→2, D→1 matches each disease to its hallmark clinical feature.

**56.** (d) Absence seizure

Absence seizures (petit mal) commonly present in school-aged children. Characteristic features are abrupt interruptions of activity, a vacant stare, and occasional subtle movements like lip quivering or blinking. The child then resumes normal activity without awareness of the lapse. Such episodes may occur multiple times a day. Unlike autism or mutism, absence seizures are brief and purely epileptic. An adjustment disorder likewise would not show these classic "blanking out" spells.

**57.** (d) Wegner's granulomatosis

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eosinophilia. These infiltrates tend to migrate within the lung fields and typically resolve spontaneously. There is no characteristic or persistent fibrosis in Loeffler's syndrome, nor does it present as a diffuse "miliary" pattern. The hallmark is transient, migratory infiltrates rather than long-standing pulmonary scarring.

**43.** (b) Median nerve

Prolonged typing and repetitive wrist movements predispose to compression of the median nerve at the carpal tunnel, resulting in carpal tunnel syndrome. Characteristic symptoms include numbness and tingling in the thumb, index, middle, and radial half of the ring finger. Axillary, radial, and ulnar nerves are less commonly affected by the specific repetitive activities of keyboard operators. Hence, among the given choices, the median nerve is the one most at risk in typists.

**44.** (b) Visible severe wasting

Kwashiorkor (protein malnutrition) typically presents with edema (especially in the feet), a "moon face" or rounded facies, and low serum albumin levels. Children often have a deceptively "plump" appearance due to fluid retention, rather than obvious severe muscle wasting. In contrast, marasmus (total calorie malnutrition) is marked by extreme wasting without edema. Thus, "visible severe wasting" is not a hallmark of Kwashiorkor, making option (b) the correct "not" feature.

**45.** (d) A-3, B-2, C-4, D-1

"Flaky paint" dermatitis on the lower limbs (A) is classically associated with zinc deficiency (3).

1. "Goose-hump" or "toad skin" lesions (B) refer to follicular hyperkeratosis seen in vitamin A deficiency (4).
2. Confabulation (C) commonly arises in Wernicke–Korsakoff syndrome, which is due to thiamine (vitamin $B_1$) deficiency (2).
3. Dementia (D) can feature prominently in pellagra caused by niacin (vitamin $B_3$) deficiency (1).

Hence, A→3, B→4, C→2, D→1.

**46.** (c) 1, 2 and 4

PUVA (psoralen plus UVA) photochemotherapy is frequently employed in plaque psoriasis (1) to reduce excessive keratinocyte proliferation and inflammation. It is also used in severe atopic dermatitis (2) where it can help control intense inflammation and pruritus. Additionally, PUVA is a recognized option for vitiligo (4) to stimulate repigmentation. By contrast, leprosy (3) is managed primarily with multidrug antimicrobial regimens and does not rely on PUVA. Hence, "1, 2, and 4" are correct.

**47.** (c) Molluscum contagiosum

Molluscum contagiosum—caused by a poxvirus—presents with small, smooth, dome-shaped papules that often have a central umbilication (pitting). It is frequently seen in children but can occur at any age, including immunocompromised adults. Chicken pox (varicella) features pruritic vesicles in different stages of evolution, herpes zoster (shingles) involves painful dermatomal vesicular eruptions, and verruca vulgaris (common warts) typically show a rough, hyperkeratotic surface rather than a pearly papule with central indentation.

**48.** (b) 1, 2 and 4

Polyarticular JRA (a subtype of juvenile idiopathic arthritis) is indeed more common in females (1). By definition, it involves ≥5 joints during the first six months (2). Rheumatoid factor can be positive or negative, but many pediatric cases are "seronegative" (4). Although uveitis can occur in juvenile arthritis, it is especially frequent in the oligoarticular (pauciarticular) form—claiming 95% incidence in polyarticular disease (3) is not accurate. Hence statements 1, 2, and 4 are correct; statement 3 is not.

**49.** (d) 1, 2 and 3

Thought insertion (believing others are placing thoughts in one's mind) is a classic first-rank symptom of schizophrenia. Delusions of guilt or persecutory beliefs—such as feeling punished for wrongdoing—may occur in schizophrenic patients. Additionally, some individuals with schizophrenia can present in a catatonic state,

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levels to rise. Meanwhile, other pituitary hormones often drop from lost hypothalamic releasing hormones, but prolactin secretion is unique in being primarily under dopamine-mediated inhibition. Hence, after hypothalamic damage, prolactin tends to increase significantly.

**65.** (b) Immediately

Guidelines for type 2 diabetes recommend immediate retinal evaluation (or as soon as feasible) at diagnosis because many patients have undetected disease for years. Retinopathy may already be present even without visual complaints. In contrast, newly diagnosed type 1 diabetics generally get their first eye exam about five years after onset. Since this patient is an adult with new diagnosis of type 2 DM but with possible longstanding hyperglycemia, an immediate ophthalmic evaluation is indicated.

**66.** (c) p24 antigen detection

During the early window period, HIV antibodies have not yet formed in measurable quantities, making antibody-based tests (ELISA or Western blot) less reliable. The p24 antigen—part of the viral capsid—appears sooner in the bloodstream and can be detected before seroconversion. CD4 count is nonspecific and does not necessarily drop immediately. Therefore, p24 antigen detection is more useful for identifying recent HIV infection in a blood donor during the window phase.

**67.** (b) Typhoid

Cholera (Vibrio cholerae) causes disease via cholera toxin; botulism (Clostridium botulinum) by botulinum neurotoxin; tetanus (Clostridium tetani) by tetanospasmin. These are classic exotoxin-mediated illnesses. Typhoid fever, caused by Salmonella Typhi, is primarily invasive and not driven by a major exotoxin causing the hallmark symptoms. While Salmonella may produce certain toxins, the central pathogenesis of typhoid is invasion, multiplication, and an immune response rather than a singular exotoxin mechanism.

**68.** (b) Anti-nuclear antibodies

Celiac disease screening commonly involves serological tests against gliadin peptides, endomysium (EMA), and tissue transglutaminase (tTG). Anti-endomysial and anti-tissue transglutaminase antibodies are especially specific. Anti-nuclear antibodies (ANA), on the other hand, are typically associated with systemic autoimmune conditions (like lupus), not with celiac. Thus, ANA is not a standard diagnostic tool for celiac disease.

**69.** (d) Dressler's syndrome

Early complications following an MI include papillary muscle dysfunction or rupture leading to acute mitral regurgitation, ventricular septal defect from septal necrosis, and pericarditis (which can be early or occur days later as post-infarction pericarditis). Dressler's syndrome is a late immune-mediated pericarditis occurring typically weeks after an MI. Hence it is not classified among the immediate or early complications of acute myocardial infarction.

**70.** (b) 1, 2 and 4

Excess growth hormone (acromegaly), excessive catecholamines (phaeochromocytoma), and hyperthyroidism can all antagonize insulin, leading to secondary diabetes mellitus. Hemochromatosis damages the pancreas (nicknamed "bronze diabetes"), also resulting in secondary diabetes. Pancreatic carcinoma can destroy insulin-producing cells, again causing hyperglycemia. Meanwhile, Conn's syndrome (primary hyperaldosteronism) does not typically cause diabetes, although it may slightly affect glucose metabolism. Therefore, 1 (thyrotoxicosis/phaeo/acromegaly), 2 (hemochromatosis), and 4 (pancreatic carcinoma) can produce secondary diabetes.

**71.** (c) 2 and 3 only

Gastric lavage is contraindicated in kerosene (hydrocarbon) poisoning (2) because of the high risk of aspiration pneumonitis, and in corrosive poisoning (3) because it can worsen esophageal/gastric injury. Although caution must be used in iron poisoning, it is not an absolute contraindication if done very early.

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and nutrient availability due to its fine particle size and mineral content (statement 1). It is also commonly employed in making construction materials like fly-ash bricks and concrete blocks (statement 2). This offers economic and environmental benefits by recycling industrial waste while reducing the need for raw materials in building and helping manage soil properties in agriculture.

**101.** (d) positional and functional relationship of an organism in an ecosystem.

An ecological niche encompasses an organism's specific role in its environment: how it obtains resources, interacts with other species, and responds to abiotic factors. It includes not only the physical space it occupies but also the functional aspects—its feeding habits, reproductive strategy, and relationships within the food web. Thus, it is broader than mere habitat or species composition (options b/c) and goes beyond just available autotroph biomass (a).

**102.** (c) Carbon monoxide

Photochemical smog principally arises from the reaction of nitrogen oxides ($NO_x$) and volatile hydrocarbons (often from vehicle exhaust or industrial emissions) in the presence of sunlight (UV radiation), producing ground-level ozone, PANs, and other oxidants. Oxygen in the air is inherently involved in ozone formation. Carbon monoxide (CO) is a pollutant but is not a key reactant in the classic photochemical smog mechanism. The essential requirements include $NO_x$, VOCs, and sunlight; CO is not strictly required.

**103.** (a) Ensuring the safety of women

In the aftermath of the tragic 2012 'Nirbhaya' case, the Government of India established the Nirbhaya Fund primarily to support initiatives aimed at enhancing the safety and security of women. The fund finances projects such as improved public transport safety, panic buttons and helplines for women, and specialized police resources for crimes against women. While promoting literacy or self-help groups are worthy goals, this specific fund is dedicated to safeguarding women from violence and fostering a more secure public environment.

**104.** (d) A round-the-world flight powered only by the solar energy

Solar Impulse 2 was a pioneering solar-powered airplane that completed a historic flight around the world without using conventional fuel. Pilots Bertrand Piccard and André Borschberg led the project to demonstrate the feasibility of clean technologies and renewable energy in aviation. The plane's wings were covered in solar cells charging onboard batteries, enabling it to fly day and night purely on solar power. It was not a government scheme or NASA mission but rather a Swiss-led technological and environmental initiative.

**105.** (a) 1 only

Ionizing radiation (such as gamma rays or electron beams) is indeed used in food preservation to kill or deactivate microbes, prolonging shelf life (statement 1). However, irradiation can produce some changes in food organoleptic properties (color, taste, odor) and can alter certain heat- or light-sensitive vitamins if higher doses are used (statement 2 is not strictly correct). While these changes can be minor when done at approved doses, it is inaccurate to say irradiation has no impact on food attributes.

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**106.** (d) 1, 2 and 3

Kutch's coastal region in Gujarat has extensive creeks, mudflats, and a broad intertidal zone—facilitating seawater influx and evaporation. The intense heat and arid climate lead to a high evaporation rate, leaving behind salt deposits that can be harvested in open pans. Furthermore, tidal flats (creeks and mudflats) trap seawater, and repeated inundations concentrate salt. All three factors—(1), (2), and (3)—contribute to this thriving salt-producing landscape.

**107.** (c) Stratosphere

Although small amounts of ozone exist throughout the atmosphere, the vast majority of "good" ozone resides in the stratosphere, roughly 10 to 50 km above Earth's surface. This

like busulfan/hydroxyurea rarely induce long-term remission in juvenile disease.

**79.** (b) 1 and 2 only

Wiskott-Aldrich syndrome is an X-linked recessive immunodeficiency characterized by eczema (often resembling atopic dermatitis), thrombocytopenia, and recurrent infections. Typically, these patients have low IgM levels and elevated IgA and IgE. The statement "low serum levels of IgA" (3) is incorrect for Wiskott-Aldrich; in fact, IgA tends to be normal or high. Therefore, only (1) and (2) correctly describe Wiskott-Aldrich syndrome.

**80.** (a) von Recklinghausen's disease

Lisch nodules—pigmented iris hamartomas—are pathognomonic of neurofibromatosis type 1, also known as von Recklinghausen's disease. They typically appear as small, tan-colored dome-shaped elevations on the iris. Louis-Bar syndrome (ataxia-telangiectasia) and tuberous sclerosis have different ocular or CNS findings, while von Hippel-Lindau involves hemangioblastomas and pheochromocytomas.

**81.** (b) Thalassemia major

A low ferritin typically indicates iron deficiency. Conditions such as celiac disease (malabsorption), nutritional deficiency, and some hemolytic disorders (like PNH) can eventually reduce iron stores. Thalassemia major, however, usually presents with normal or increased ferritin (partly due to enhanced intestinal absorption of iron and multiple transfusions if treated). Despite its microcytic RBCs, thalassemia generally does not show low ferritin. Thus, out of these choices, thalassemia major is the least likely cause of low-ferritin, microcytic anemia.

**82.** (d) 28 weeks

Around 6–7 months (roughly 24–28 weeks), an infant typically can sit with support or by leaning forward on outstretched arms ("tripod sitting"). They often bear weight on their legs if held upright, "bouncing" with support. Laughter emerges around 3–4 months, but true anxiety or concern upon mother's departure (a precursor to separation anxiety) is more noticeable near 6–7 months. Hence, 28 weeks (≈7 months) fits best among the given options.

**83.** (a) A-1, B-4, C-2, D-3

1. A. Skin lesion + hepatomegaly → Histiocytosis (1), e.g., Langerhans cell histiocytosis often shows skin rashes plus liver involvement.
2. B. Engorged neck veins + hepatomegaly → Constrictive pericarditis (4), where venous return is impeded, causing jugular venous distension and hepatic congestion.
3. C. Cataract + hepatomegaly → Galactosemia (2), presenting with failure to thrive, liver dysfunction, and cataracts.
4. D. Hydrocephalus + hepatomegaly → Congenital toxoplasmosis (3) can involve CNS (hydrocephalus) plus hepatic enlargement.

Thus, (a) is correct: A→1, B→4, C→2, D→3.

**84.** (c) Pauciarticular type

Among the subtypes of juvenile rheumatoid arthritis (also called juvenile idiopathic arthritis), the pauciarticular (oligoarticular) category—affecting four or fewer joints in the first six months—is the most common, especially in young females. Polyarticular forms (RF-positive or RF-negative) and systemic-onset disease (Still's disease) are less frequent. Pauciarticular JIA often presents with knee or ankle joint involvement, a higher risk of uveitis, and typically a milder course compared to polyarticular or systemic disease.

**85.** (a) Plenty of oral/ IV fluids and observation

In a clinically stable dengue patient with no active bleeding, normal blood pressure, and acceptable hematocrit, aggressive platelet transfusions are not routinely indicated solely for a low platelet count. Guidelines emphasize maintaining adequate hydration and careful monitoring. Platelet transfusions are generally reserved for significant hemorrhage or extremely low counts (<10,000–20,000/μL) with high bleeding risk. Thus, the best approach in this child—who is stable and without bleeding—is to ensure good

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Granulomatosis with polyangiitis (Wegener's) frequently affects the upper and lower respiratory tracts and kidneys. Classic findings include chronic sinus or nasal symptoms, pulmonary nodules or cavities, and renal involvement characterized by focal necrotizing (crescentic) glomerulonephritis. Hemoptysis is common when lung lesions erode into airways. Aspergillosis rarely causes such a triad, polyarteritis nodosa typically spares the lungs, and metastatic renal carcinoma might produce hematuria plus lung lesions but lacks the sinus involvement and characteristic glomerulonephritis.

**58.** (c) Legionella pneumophila

Legionella pneumonia commonly presents with fever, respiratory symptoms, gastrointestinal complaints (diarrhea), and neurological manifestations (confusion). Bilateral infiltrates on chest X-ray are also typical. Streptococcus pneumoniae and Staphylococcus aureus pneumonia generally produce focal or lobar consolidation rather than this distinctive multisystem picture. Pseudomonas predominantly affects immunocompromised or hospital settings. In a relatively young adult with confusion, GI symptoms, and diffuse pneumonia, Legionella is the prime suspect.

**59.** (c) Ebstein's anomaly

Ebstein's anomaly malformation of the tricuspid valve and right ventricle has a known association with Wolff-Parkinson-White (WPW) syndrome, a type of pre-excitation involving an accessory conduction pathway. ASD, bicuspid aortic valve, or patent ductus arteriosus are not typically linked to WPW. The hallmark of Ebstein's is displacement of the tricuspid valve leaflets into the right ventricle, with resultant atrialization of a portion of the ventricle and frequent arrhythmic complications, including pre-excitation.

**60.** (a) Mitral stenosis

In mitral stenosis—commonly rheumatic in origin—the thickened anterior mitral leaflet in diastole can appear "domed," described as a "hockey-stick" shape on echocardiography. This sign occurs because the restricted leaflet tip moves minimally while the body of the leaflet bulges into the ventricle. Mitral incompetence (regurgitation), aortic stenosis, or aortic regurgitation have different characteristic findings and do not exhibit this classic "hockey-stick" configuration.

**61.** (d) Herpes zoster

Hutchinson sign refers to vesicular lesions on the tip or side of the nose, indicating involvement of the nasociliary branch of the trigeminal nerve in herpes zoster ophthalmicus. This correlates with a high risk of ocular complications. While herpes simplex can infect the eye (e.g., keratitis), the specific "Hutchinson sign" is classically linked to zoster. EBV and CMV also do not typically produce this hallmark clinical finding.

**62.** (d) Hypoglycaemia

Chronic phenytoin therapy is associated with hirsutism, lymph node enlargement, gingival hyperplasia, peripheral neuropathy, and cerebellar dysfunction (ataxia). It can also cause megaloblastic anemia from folate interference. However, hypoglycemia is not a known typical adverse effect of phenytoin; the drug does not significantly stimulate insulin release or hamper gluconeogenesis in routine clinical doses. Therefore, among the listed choices, hypoglycemia is the least likely outcome.

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**63.** (a) Bipolar cells

In standard neuroanatomical classification, rods and cones are specialized photoreceptor cells, while bipolar cells are considered the "first order neurons" in the retina. They receive signals from photoreceptors and relay them to the ganglion cells (the second order), whose axons form the optic nerve. Although rods and cones initiate the visual response, the formal labeling in many texts treats bipolar cells as the first neuronal relay in the retina-to-brain pathway.

**64.** (b) Prolactin

The hypothalamus exerts tonic inhibitory control on prolactin secretion via dopamine (often called prolactin-inhibiting factor). Ablation or destruction of the hypothalamus removes this inhibitory influence, causing serum prolactin

coding genes but also sheds light on how these genes coordinate complex developmental processes (statement 1). It further enables scientists to discover and analyze non-coding or regulatory DNA segments that modulate gene expression—enhancers, silencers, promoters, and other control elements (statement 2). Thus, having the complete genome map is critical for comprehending both the gene networks driving growth and the regulatory architecture underlying when and where genes are turned on/off.

**94.** (d) 1, 2, 3 and 4

Well-known Indian mangrove habitats include:

1. Bhitarkanika in Odisha,
2. Godavari delta (e.g., Coringa mangroves) in Andhra Pradesh,
3. Pichavaram in Tamil Nadu,
3. lesser-known patches in the Kaveri (Cauvery) delta near Muthupet in Tamil Nadu.

All four regions besides the Sundarbans support mangrove ecosystems, though some sites are more extensive than others. Hence, all listed areas—1, 2, 3, and 4—harbor mangrove forests.

**95.** (d) A fruit juice containing 5% or more sugar cannot be made into vinegar in the households.

To produce vinegar, one generally ferments sugary materials—often fruit juice—first with yeast to create alcohol, followed by acetic acid bacteria to convert alcohol to acetic acid (i.e., vinegar). Dried fruits can be used as they provide fermentable sugars. Vinegar is essentially dilute acetic acid. However, it is untrue that a juice containing ≥5% sugar "cannot" be made into vinegar. In fact, more sugar can facilitate the fermentation process, provided the correct microorganisms and conditions are present.

**96.** (b) Adenovirus

Onyx-015 is a genetically modified adenovirus designed to selectively replicate within and destroy cancer cells (particularly those with disrupted p53 tumor suppressor pathways). By targeting malignant cells while sparing healthy ones, Onyx-015 exploits the defective molecular mechanisms common in tumors. Parvovirus, pox viruses, and herpes simplex viruses have also been investigated for oncolytic therapy, but Onyx-015 specifically refers to an adenovirus-based vector.

**97.** (c) Federal Republic

The Preamble to the Constitution of India declares India to be a Sovereign, Socialist, Secular, Democratic Republic. It does not use the term "federal" to describe the union of states, even though India has a federal structure in practice. The words "socialist" and "secular" were added by the 42nd Amendment (1976), but "federal republic" has never been part of the official Preamble text. Hence, among the listed options, "Federal Republic" is the one not included.

**98.** (d) 1, 2 and 3

Pasteurization effectively kills or significantly reduces many pathogenic organisms found in raw milk, including Brucella (causing brucellosis), Listeria monocytogenes (listeriosis), and Salmonella species (salmonellosis). Heat treatment at the prescribed temperatures and times (e.g., 72 °C for 15 seconds in high-temperature short-time pasteurization) disrupts these bacteria's viability. Thus, properly pasteurized milk markedly lowers the risk of all three infections: brucellosis, listeriosis, and salmonellosis.

**99.** (c) The Vice President of India

Under the Constitution of India, the Vice President automatically serves as ex-officio Chairman (presiding officer) of the Rajya Sabha (Council of States). The Prime Minister leads the Union Cabinet but does not preside over any legislative house. The Speaker of Lok Sabha controls the lower house (Lok Sabha). The President is the head of state and does not chair legislative sessions. Therefore, the Vice President is statutorily the Chairman of Rajya Sabha.

**100.** (c) Both 1 and 2

Fly ash, a byproduct of coal combustion, has multiple practical uses. It can be amended into agricultural soils to improve water retention

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oral/IV fluids, close observation, and supportive care.

**86.** (d) A-3, B-1, C-2, D-4

Calcium sodium edetate (A) chelates lead (3). Sodium nitrite (B) is used (along with sodium thiosulfate) in cyanide poisoning (1) by inducing methemoglobin formation that binds cyanide. Methylene blue (C) reverses methemoglobinemia induced by compounds such as nitrobenzene (2). Atropine (D) blocks muscarinic effects in organophosphate poisoning (4).

**87.** (c) A-1, B-2, C-3, D-4

Thalassemia major (A) often shows increased serum iron, decreased TIBC, and increased ferritin (1) from transfusions and enhanced gut iron absorption.Iron deficiency anemia (B) is characterized by decreased serum iron, increased TIBC, and low ferritin (2).Nephrotic syndrome (C) leads to decreased serum iron, decreased TIBC (due to urinary loss of transferrin), and often increased ferritin (3).Acute iron poisoning (D) produces increased serum iron, normal TIBC, and normal ferritin initially (4).

**88.** (b) 1 and 4 only

This presentation is most consistent with a simple febrile seizure. Primary management is controlling the fever (1) through antipyretics, tepid sponging, and close observation. Although IV benzodiazepines are used during prolonged or repeated seizures, routine IV phenytoin plus lumbar puncture is not mandatory in a straightforward simple febrile seizure without meningeal signs (2 is not routinely required). Maintenance anticonvulsants for a year (3) are not recommended. Short-term intermittent prophylaxis with rectal diazepam (4) can be used to reduce recurrence during febrile episodes.

**89.** (a) A-4, B-2, C-1, D-3

- Hypothyroidism (A): Elevated TSH with low $T_3$, $T_4$ (4).Cushing's syndrome (B): Often shows increased urinary 17-ketosteroids (2) reflecting excess cortisol and androgen metabolites. Pheochromocytoma (C): Marked by increased urinary excretion of catecholamines (1). Hypoparathyroidism (D): Leads to hypocalcemia and hyperphosphatemia (3).So A→4, B→2, C→1, D→3 is correct.

**90.** (d) A-4, B-2, C-1, D-3

Extrapyramidal cerebral palsy (A) is often linked to bilirubin encephalopathy (4), especially kernicterus damaging the basal ganglia.

Spastic quadriplegia (B) arises from more diffuse brain injury, such as multicystic encephalomalacia (2).Spastic hemiplegia (C) commonly follows a focal lesion (like a perinatal stroke, 1).Spastic diplegia (D) often results from periventricular leukomalacia (3), typically in premature infants affecting the corticospinal tracts controlling the legs.

Hence A→4, B→2, C→1, D→3.

**91.** (a) 1 only

Keoladeo Ghana National Park (formerly Bharatpur Bird Sanctuary) is indeed located in Rajasthan, so pair 1 is correct. Sultanpur National Park lies in Haryana (near Gurugram), not in Uttar Pradesh, making pair 2 incorrect. The Valley of Flowers National Park is situated in the Chamoli district of Uttarakhand, not Himachal Pradesh, so pair 3 is also incorrect. Therefore, only the first pair is correctly matched with its respective state.

**92.** (c) Himalayas are located in lower latitudes

Because the Himalayas lie closer to the equator than the Alps, the tropics' warmth raises the altitude at which year-round snow can remain. At lower latitudes, solar radiation is stronger, so to sustain permanent ice, mountains must be taller. Even though the Himalayas also intercept monsoonal moisture and are themselves quite high, the biggest factor is their geographic position in subtropical latitudes, pushing their snowline to greater altitudes than in mid-latitude ranges like the Alps.

**93.** (c) Both 1 and 2

Knowing an organism's genome sequence not only reveals the blueprint of all protein-

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stratospheric ozone layer absorbs much of the Sun's harmful ultraviolet (UV-B) radiation, protecting living organisms. The ionosphere and mesosphere lie higher, and the troposphere beneath has comparatively little ozone (though ground-level ozone in the troposphere can be a pollutant). Thus, the stratosphere is the major reservoir of atmospheric ozone.

**108.** (d) 1, 2 and 3

All three listed acids can function in food preservation contexts. Lactic acid is used in pickling and fermentation. Sorbic acid (and its salts) is a widely employed preservative against molds and yeasts in items like cheese or baked goods. Sulphurous acid (or sulfites) is also used to inhibit microbial growth in products such as dried fruits and wines. Therefore, each one—lactic, sorbic, and sulphurous—can serve as a food preservative.

**109.** (c) Both 1 and 2

DNA microarrays—often called "gene chips"—enable the parallel measurement of expression levels for thousands of genes at once. By comparing samples (e.g., healthy vs. diseased tissue), researchers see which genes are up- or down-regulated in disease (statement 1). The technology indeed simultaneously visualizes the activity of a large number of genes on a small silicon or glass slide (statement 2). Thus, both statements accurately capture the capabilities of DNA microarray methods.

**110.** (a) Plant

Artemisinin is an anti-malarial compound extracted from the sweet wormwood plant (Artemisia annua). It is highly effective against the Plasmodium parasites causing malaria, especially when used in combination therapies (ACT—Artemisinin-based Combination Therapy). The drug's discovery earned Dr. Tu Youyou a share of the Nobel Prize in Physiology/Medicine. It is not derived from fungi, minerals (rocks), or algae; the correct biological source is this particular herb widely cultivated in parts of Asia.

**111.** (d) 1, 2 and 3

Several adsorbent materials—including aluminium oxide (alumina), cellulose-based filters, and silica—can bind or capture heavy metals from water, aiding in their removal. Alumina columns are commonly used in chromatography/filtration. Cellulose (often modified chemically) can chelate specific metal ions. Silica gel and related porous silicates can also trap metallic contaminants. Since all three listed substances have known applications for adsorption or ion exchange, each can help extract heavy metals.

**112.** (a) Rain forest – deciduous forest – coniferous forest

Moving outward from the equatorial zone (low latitudes) to mid/high latitudes, one typically transitions from tropical rainforests (warm, high rainfall) through temperate deciduous forests (moderate climates) and then into coniferous/boreal forests (colder regions). Hence the latitudinal vegetation shift generally goes from lush rainforests near the tropics, to deciduous forests in temperate zones, and finally to coniferous (taiga) forests closer to subarctic areas.

**113.** (b) 2 and 3 only

LED lamps are constructed from semiconductor materials (statement 2) and generally cost more upfront than incandescent or fluorescent lights (statement 3). However, they actually have a longer lifespan than incandescents—often lasting tens of thousands of hours versus ~1000 hours for typical incandescent bulbs—so statement 1 is false. Despite being pricier initially, they use less energy and last longer, typically saving cost over time.

**114.** (b) protection of biodiversity that has vanished from surrounding areas due to exploitation by man

Sacred groves in India are small forest patches protected by local communities due to religious or cultural traditions. They often serve as refuges for flora and fauna that might otherwise disappear from heavily used or deforested landscapes. Hence, these groves can harbor rare

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plant species, medicinal herbs, and wildlife. Their ecological value lies in maintaining biodiversity lost elsewhere, rather than primarily meeting fuelwood needs or addressing global warming. They also foster cultural significance, but biodiversity protection is key.

**115.** (a) a gene that enables some crop plants to fight pests

Cry1Ac is a Bt gene derived from the bacterium Bacillus thuringiensis. When introduced into crops (like cotton or certain other transgenic plants), it expresses insecticidal proteins that kill specific pests (particularly lepidopteran larvae) by binding to receptors in their gut, causing cell lysis. This built-in pest resistance reduces chemical pesticide use. It is unrelated to bird flu viruses or golden rice (which uses genes involved in carotenoid biosynthesis). Thus, Cry1Ac is primarily an insecticidal gene for crop protection.

**116.** (c) 2 only — Algal blooms

When nitrates become excessive in aquatic ecosystems (often through agricultural runoff), they fertilize rapid algal growth known as algal blooms (statement 2). These blooms can deplete dissolved oxygen and ultimately reduce biodiversity rather than proliferate it, so statement 1 is incorrect. While nitrates can contribute to minor pH shifts, major "acidification" of water bodies is more typically associated with carbon dioxide or sulfur compounds, not simply nitrate loading. Hence only algal blooms (2) is the well-known direct outcome.

**117.** (c) 1, 2 and 3

Under the UN Convention on the Rights of the Child, children enjoy many rights, including the right to express their views freely (Article 12/13), the right to rest, leisure, and play (often referred to as recreation, Article 31), and the right to a name and nationality (Article 7). These ensure that each child's identity, freedom of expression, and developmental needs are recognized and protected by signatory nations.

**118.** (b) 2 only

Recombinant gene transfer is not limited to "one eukaryote to another eukaryote" (statement 1 is incorrect). In fact, many common vectors—like bacterial plasmids enable transferring DNA from prokaryotes into eukaryotic cells or vice versa. As for statement 2, it is indeed possible to take a gene (originally from an animal source) and engineer it into a plant cell using appropriate vectors (e.g., a modified Ti-plasmid of Agrobacterium or other genetic engineering tools). Hence only statement 2 is correct.

**119.** (b) It is a bio-diesel yielding plant that can grow well in areas of low rainfall.

Jatropha (Jatropha curcas) has gained attention because its seeds contain oil suitable for conversion into bio-diesel. It is hardy, tolerates poor or semiarid soils, and requires relatively limited water, making it attractive for cultivation in low-rainfall regions. Although it is not a variety of rice or pearl millet, and it is not a genetically modified potato, its chief significance lies in its potential as an alternative energy crop.

**120.** (c) Ribosomal RNA

Gene silencing (e.g., RNA interference) frequently involves small interfering RNA (siRNA), microRNA (miRNA), or even double-stranded RNA as triggers. These molecules guide the cellular machinery (e.g., RISC complex) to degrade or block the target mRNA, thereby silencing gene expression. Ribosomal RNA (rRNA), on the other hand, is a structural and functional part of the ribosome—responsible for protein synthesis—rather than a direct mediator of gene silencing. Thus, rRNA is not typically part of RNA interference.

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# QUESTION PAPER 2014

1. A patient with small cell lung carcinoma has symptomatic hyponatraemia (serum sodium 127 mmol/ L). The most likely etiology is:
   (a) Fanconi Syndrome
   (b) Cushing's Syndrome
   (c) Metabolic Syndrome
   (d) Syndrome of inappropriate ADH

2. Regarding Gilbert's syndrome, which one of the following statements is not correct?
   (a) Jaundice becomes severe with time.
   (b) Hyperbilirubinemia increases after fasting.
   (c) Inheritance of disease is autosomal dominant.
   (d) Liver histology is normal.

3. Which of the following is an uncommon cause of autonomic dysfunction?
   (a) G B S (Guillain Barre Syndrome).
   (b) Porphyria.
   (c) Diabetic neuropathy.
   (d) Neuropathy associated with Vitamin B12 deficiency.

4. Peripheral Eosinophilia is not a characteristic feature of:
   (a) Hypersensitivity pneumonitis.
   (b) Allergic aspergillosis.
   (c) Tropical eosinophilia.
   (d) Loeffler's syndrome.

5. Salicylate intoxication in adults usually causes:
   1. Severe respiratory alkalosis.
   2. Mixed metabolic acidosis respiratory alkalosis.
   3. Hyperchloremic metabolic acidosis.

   Select the correct answer using the code given below
   (a) 1 and 2 only
   (b) 3 only
   (c) 2 and 3 only
   (d) 1, 2 and 3

6. With reference to psoriatic arthritis, which one of the following statements is not correct?
   (a) In 70 – 80% patients psoriasis precedes arthritis.
   (b) Distribution of arthritis is mainly asymmetrical.
   (c) Involvement of PIP joints is more than DIP joints.
   (d) Cup like erosions are seen on X ray.

7. Consider the following statements regarding rheumatic heart disease:
   1. Rheumatic carditis is a pancarditis.
   2. Carey–Coombs murmur is a delayed systolic murmur heard during the course of acute rheumatic fever.
   3. Mitral regurgitation is the most common manifestation of acute rheumatic carditis.

   Which of the statements given above is/are correct?
   (a) 1 only
   (b) 2 and 3
   (c) 1 and 2
   (d) 1 and 3

8. The extra cellular fluid deficit in a comatose patient of diabetic ketoacidosis is replenished by:
   (a) 0.9 % NaCl
   (b) 3 % NaCl
   (c) 5 % Dextrose
   (d) Ringer's lactate

9. Which one of the following is not associated with a high reticulocyte count?
   (a) Acute bleed
   (b) Haemolytic anaemia
   (c) Megaloblastic anaemia
   (d) Response to treatment in 'nutrition – deficiency' anaemia

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**10.** What happens when normal erythrocytes (blood – group matched) are transfused into a patient with anaemia secondary to an intracorpuscular defect?
(a) Donor cells are destroyed.
(b) Donor cells have normal survival.
(c) Depends on the severity of anaemia.
(d) Depends on whether the donor cells are fresh or stored (older than a week).

**11.** Elevated serum alkaline phosphatase is seen in all except:
(a) Osteoporosis
(b) Osteomalacia
(c) Paget's disease of bone
(d) Cholestatic jaundice

**12.** Which one of the following pairs is not correctly matched?
(a) Uraemic acidosis – Haemodialysis
(b) Methanol intoxication – Ethanol
(c) Hyperosmolar coma – Intravenous fluids
(d) Starvation ketosis – Glucagon

**13.** In a young epileptic woman wishing to use oral contraceptive agents, which of the following drugs is not an ideal agent?
(a) Carbamazepine
(b) Sodium valproate
(c) Topiramate
(d) Ethosuximide

**14.** Which of the following is not true about alcoholic cirrhosis?
(a) On many occasions alcoholic hepatitis and alcoholic cirrhosis coexist.
(b) Concomitant HIV infection accelerates it.
(c) Starts with macronodular and later on changes to micronodular cirrhosis.
(d) 10 – 40 % remains clinically silent.

**15.** Cardiac arrest may be due to all of the following except:
(a) Ventricular fibrillation
(b) Atrial fibrillation
(c) Acute myocardial infarction
(d) Pulmonary embolism

**16.** Which of the following is not useful in the management of status epilepticus?
(a) Lorazepam
(b) Phenytoin
(c) Phenobarbitone
(d) Carbamazepine

**17.** The following are indications for renal replacement in ARF except:
(a) Hyperkalemia
(b) Fluid overload
(c) Uraemic pericarditis
(d) Metabolic alkalosis

**18.** Biphasic defibrillation in case of ventricular fibrillation is first done with:
(a) 200 Joules
(b) 250 Joules
(c) 300 Joules
(d) 360 Joules

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**19.** Gastric erosions are likely to be associated with the following conditions except:
(a) Pernicious anaemia
(b) Cor pulmonale
(c) Polycythemia rubra vera
(d) Hepatic cirrhosis

**20.** Wegener's granulomatosis is characterized by all of the following except:
(a) Vasculitis of respiratory tract
(b) Granulomatous uveitis
(c) Granulomatous hepatitis
(d) Glomerulonephritis

**21.** An 11 year old boy has elevated prothrombin and activated partial prothrombin time. What is the most likely defect?
(a) Defect in extrinsic pathway
(b) Defect in intrinsic pathway
(c) Defect in common pathway
(d) Defect in platelet function

haemorrhagic disease
(d) It is the treatment of choice in patients with acute severe haemoptysis

**61.** Consider the following clinical features:
1. Impaired judgement
2. Impaired memory
3. Alteration of personality
4. Clouding of consciousness

Which of the above are characteristics of dementia?
(a) 1 and 2 only
(b) 1, 2 and 3 only
(c) 3 and 4 only
(d) 1, 2, 3 and 4

**62.** Koebner's phenomenon is seen in:
(a) Lupus vulgaris
(b) Lupus erythematosis
(c) Psoriasis
(d) Eczematous dermatitis

**63.** Which hepatitis marker can be used to diagnose Acute Hepatitis B?
(a) HBc Ag
(b) Anti HBc
(c) HBs Ag
(d) HBe Ag

**64.** Which one of the following is not an example of metabolic acidosis with high anion gap?
(a) Lactic acidosis
(b) Ketoacidosis
(c) Methanol poisoning
(d) Renal tubular acidosis

**65.** Which one of the following is not a vector-borne disease?
(a) Japanese encephalitis
(b) Dengue fever
(c) Kala-azar
(d) Meningococcal meningitis

**66.** Regarding management of Myxoedema coma, which of the following is not true?
(a) Treatment must begin after biochemical confirmation of the diagnosis
(b) Levothyroxine usually given by I/V route
(c) Rewarming of the patient
(d) Cautious use of intravenous fluids

**67.** Which one of the following is the major determinant of plasma osmolality?
(a) Serum sodium
(b) Serum potassium
(c) Blood glucose
(d) Blood urea

**68.** Acute aortic regurgitation occurs in:
(a) Infective endocarditis
(b) Ankylosing spondylitis
(c) Marfan's syndrome
(d) Rheumatoid arthritis

**69.** Vitamin B12 deficiency can cause the following except:
(a) Myopathy
(b) Myelopathy
(c) Optic atrophy
(d) Peripheral neuropathy

**70.** A patient with cirrhosis develops oliguria and worsening azotemia. Urinary sediment is normal. Urinary sodium concentration is 5 meq/L. The most likely cause could be:
(a) Acute cortical necrosis
(b) Acute tubular necrosis
(c) Acute glomerulonephritis
(d) Hepatorenal syndrome

**71.** A 6 week old infant presents with recurrent nonbilious vomiting with some dehydration. A mass is palpable in right upper quadrant of abdomen with visible peristalsis. The most likely diagnosis is:
(a) Intussusception
(b) Congenital hypertrophic pyloric stenosis
(c) Small intestine obstruction
(d) Duodenal atresia

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4. Diabetes mellitus may be associated in nearly 25 % of acromegalics.

Which of these statements are correct?
(a) 1, 2 and 3
(b) 1, 3 and 4
(c) 1, 2 and 4
(d) 2, 3 and 4

**30.** Of all the types of lupus nephritis, the worst outcome is seen in:
(a) Minimal mesangial
(b) Diffuse nephritis
(c) Focal segment nephritis
(d) Membranous nephritis

**31.** Which of the following is not a cause of hypomagnesemia?
(a) Beta blockers
(b) Chronic Pancreatic insufficiency
(c) Poorly controlled diabetes mellitus
(d) Alcoholism

**32.** Among the following, which one is not a good dietary source of iron?
(a) Liver
(b) Jaggery
(c) Fish
(d) Milk

**33.** Match List I with List II and select the correct answer using the code given below:

| | **List I (Poison)** | | **List II (Antidote)** |
|---|---|---|---|
| A | Benzodiazepine | 1 | D-penicillamine |
| B | Copper sulphate | 2 | Flumazenil |
| C | Opiates | 3 | N–acetyl cysteine |
| D | Paracetamol | 4 | Naloxone |

(a) A-2 B-4 C-1 D-3
(b) A-2 B-1 C-4 D-3
(c) A-3 B-1 C-4 D-2
(d) A-3 B-4 C-1 D-2

**34.** An elderly male presented with unilateral headache, fever and high ESR (110 mm). What is the most likely diagnosis?
(a) Tubercular meningitis
(b) Migraine
(c) Giant cell arteritis
(d) Space occupying lesions

**35.** Which of the following is not a defect in calcium channels?
(a) Episodic ataxia – 2
(b) Spinocerebellar ataxia – 6
(c) Hyperkalemic periodic paralysis
(d) Hypokalemic periodic paralysis

**36.** Which of the following is a loop diuretic?
(a) Ethacrynic acid
(b) Spironolactone
(c) Indopamide
(d) Thiazide

**37.** The classical features of Wernicke's encephalopathy are the following except:
(a) Horizontal nystagmus
(b) Confusional state
(c) Ophthalmoplegia
(d) Extension plantar response

**38.** Which one of the following is not seen in hepatorenal syndrome?
(a) Hypotension
(b) Acute renal failure
(c) Low urinary sodium
(d) Low serum potassium

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**39.** Common sites of involvement of Takayasu's arteritis are the following except:
(a) Subclavian artery
(b) Common carotid artery
(c) Abdominal aorta
(d) Pulmonary artery

**40.** In which of the following is clubbing a common occurrence?
1. Infective endocarditis
2. Congestive cardiac failure

**22.** The radiological findings in chest X ray in sarcoidosis includes the following except:
(a) Bilateral symmetrical lymphadenopathy on chest X ray is commonly seen.
(b) Upper lobe involvement is more than that of lower lobe.
(c) Egg shell calcification is seen on X ray.
(d) Pleural effusion is a common finding.

**23.** Acute rheumatic fever is caused by:
(a) Coagulase negative staphylococcus
(b) Streptococcus pneumonia
(c) Group A streptococcus
(d) Group D streptococcus

**24.** Which of the following is not a complication of peptic ulcer?
(a) Gastric outlet obstruction
(b) Perforation
(c) Indigestion
(d) Bleeding

**25.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Rickettsial infection)** | | **List II (Means of transmission to humans)** |
|---|---|---|---|
| A | Rocky mountain spotted fever | 1 | Tick bite |
| B | Q fever | 2 | Mite bite |
| C | Rickettsial pox | 3 | Infected louse passes feces into broken skin. |
| D | Epidemic typhus | 4 | Inhalation of dried infected material |

(a) A- 1 B-4 C-2 D-3
(b) A-2 B-3 C-4 D-1
(c) A-4 B-1 C-2 D-3
(d) A-1 B-1 C-2 D-4

**26.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Clinical features)** | | **List II (Diagnosis)** |
|---|---|---|---|
| A | Osler's node | 1 | Patent ductus arteriosus with reversal of shunt |
| B | Differential cyanosis | 2 | Aortic stenosis with aortic regurgitation |
| C | Bisferiens pulse | 3 | Pulmonary hypertension |
| D | Graham Steel murmur | 4 | Subacute bacterial endocarditis |

(a) A-4 B-1 C-2 D-3
(b) A 4 B-1 C-3 D-2
(c) A-1 B-4 C-2 D-3
(d) A-1 B-4 C-3 D-2

**27.** Consider the following:
1. Normal anion gap
2. Hyperchloraemic acidosis
3. Inappropriately high urinary pH (>5.4)

Which of the above are the characteristic features of renal tubular acidosis (RTA)?
(a) 1, 2 and 3
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1 and 3 only

**28.** Which of the following are typical features of Parkinsonism?
1. Failure to swing the arms while walking
2. Nystagmus
3. Cogwheel rigidity
4. Festinating gait

Select the correct answer using the code given below.
(a) 2, 3 and 4
(b) 1, 2 and 4
(c) 1 and 3 only
(d) 1, 3 and 4

**29.** Consider the following statements about acromegaly:
1. Fibroma molluscum and acanthosis nigricans are common findings.
2. Paradoxical growth hormone response to TRH administration is observed.
3. Acro-osteolysis is a common radiological finding.

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**50.** What is the commonest organism for prosthetic valve endocarditis?
(a) Staphylococcus epidermidis
(b) Streptococcus viridans
(c) HAECK organism
(d) Staphylococcus aureus

**51.** Tuberculoid leprosy is likely to have:
(a) Leonine facies
(b) Negative lepromin test
(c) Thickened peripheral nerve
(d) Abundant lepra bacilli in the skin lesion

**52.** The following are true regarding Henoch Schonlein purpura except:
(a) 2/3rd cases are preceded by viral upper respiratory tract infection.
(b) Renal involvement is seen in around 40 % of cases.
(c) Small vessels are commonly affected.
(d) Purpura is seen all over the body especially the upper limbs.

**53.** Which one of the following statements is not correct regarding cluster headache?
(a) Females are more commonly affected than males.
(b) Pain usually occurs in periodicity.
(c) Unilateral photophobia is essentially present.
(d) Autonomic features may be present.

**54.** Maturity onset diabetes of the young (MODY) is inherited as:
(a) Autosomal dominant
(b) Autosomal recessive
(c) X linked dominant
(d) X linked recessive

**55.** Ghon's complex is not characterized by:
(a) Hilar lymph nodes
(b) Pleural effusion
(c) Prominent draining lymphatics
(d) Subpleural focus

**56.** Match list I with list II and select the correct answer using the code given below the lists:

| | **List I (Urine exam)** | | **List II (Disease)** |
|---|---|---|---|
| A | Red cell casts | 1 | Nephrotic syndrome |
| B | Microscopic haematuria | 2 | Chronic renal failure |
| C | Proteinuria | 3 | Polycystic kidney disease |
| D | Broad cell casts | 4 | Glomerulonephritis |

Code:
(a) A-4 B-3 C-1 D-2
(b) A-3 B-2 C-1 D-4
(c) A-2 B-3 C-4 D-1
(d) A-4 B-1 C-2 D-3

**57.** Which one of the following is not a feature of Guillain–Barre syndrome?
(a) Albumino–cytological dissociation
(b) Transient bladder disturbances
(c) Areflexia
(d) Babinski plantar response

**58.** With reference to Marfan's syndrome, which one of the following is not correct?
(a) Lens of the eye is dislocated downward
(b) Aorta regurgitation is present in many patients
(c) There is Fibrillin 1 gene mutation
(d) Ratio of upper segment to lower segment is less than 1

**59.** Tetany may be a feature of the following except:
(a) Hyperventilation
(b) Hypokalemic alkalosis
(c) Hypomagnesaemia
(d) Hyponatraemia

**60.** Regarding vitamin 'K', which one of the following statements is correct?
(a) It is a water soluble vitamin
(b) Its body stores can last more than 8 years
(c) Its routine prophylaxis in newborn children is recommended to prevent early

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3. Pulmonary thromboembolism
4. Ebstein anomaly

Select the correct answer using the code given below:
(a) 1 only
(b) 1 and 2
(c) 2 and 3
(d) 1 and 4

**41.** What is the most common lobe involved in Herpes Simplex virus encephalitis?
(a) Frontal lobe
(b) Temporal lobe
(c) Occipital lobe
(d) Parietal lobe

**42.** Consider the following statements about staphylococcal pneumonia:
1. Three-fourth of the patients are below the age of one year.
2. Pneumatoceles are common.
3. It is the commonest cause of empyema in a child below two years of age.
4. The condition is easily amenable to treatment in the outdoors.

Which of the above statements are correct?
(a) 1, 2 and 3
(b) 1 and 2 only
(c) 1 and 4
(d) 2 and 3 only

**43.** In carcinoid syndrome, the most common valvular lesion is:
(a) Mitral stenosis
(b) Mitral regurgitation
(c) Tricuspid regurgitation
(d) Pulmonary stenosis

**44.** $Na^+$ is reabsorbed in which part/parts of kidney ?
1. Proximal convoluted tubule
2. Distal convoluted tubule
3. Thick ascending limb of loop of Henle
4. Collecting duct

Select the correct answer using the code given below:
(a) 1 only
(b) 1 and 3 only
(c) 2 and 4
(d) 1, 2 and 3

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**45.** A 40 year old female presented with dysphagia and inability to open the mouth fully. The most likely diagnosis is:
(a) Systemic lupus erythematosus
(b) Systemic sclerosis
(c) Dermatomyositis
(d) Rheumatoid arthritis

**46.** Which one of the following tests is best for measuring glomerular function?
(a) Blood urea
(b) Serum creatinine
(c) Creatinine clearance rate
(d) Ultrasound of kidney

**47.** Optic chiasmal lesion commonly produces:
(a) Homonymous hemianopia
(b) Bitemporal hemianopia
(c) Uni–ocular vision loss
(d) Concentric field defect

**48.** Adult hemoglobin consists of the following chains:
(a) $2\alpha + 2\beta$
(b) $2\alpha + 2\delta$
(c) $2\beta + 2\gamma$
(d) $2\alpha + 2\gamma$

**49.** Consider the following statements regarding rheumatoid arthritis:
1. The synovial fluid looks cloudy.
2. Synovial fluid viscosity is reduced.
3. Synovial fluid complement levels are markedly decreased.
4. Lymphocytes predominate in the differential white blood cell count in the synovial fluid.

Which of the statements given above are correct?
(a) 1, 2 and 3
(b) 1, 3 and 4
(c) 1, 2 and 4
(d) 2, 3 and 4

**72.** A 2 year old previously healthy child develops abrupt onset high grade fever, drooling of saliva and respiratory distress. He has a toxic look and becomes severely ill within few hours. What is the most likely clinical diagnosis?
(a) Acute tonsilopharyngitis
(b) Tracheo-oesophageal fistula
(c) Acute Epiglottitis
(d) Laryngeal web

**73.** A 6 year old child presents with oliguria, haematuria, puffiness of face. He has a convulsion and blood pressure is found to be 200/100 mm Hg. Laboratory tests reveal hemoglobin: 12 g/dl, total leucocyte count: 7200/$mm^3$, platelet count: 3.1 lakhs/$mm^3$, blood urea: 80 mg/dl and serum creatinine: 1.1 mg/dl. What is the most likely diagnosis?
(a) Haemolytic uraemic syndrome
(b) Urinary tract infection
(c) Acute glomerulonephritis with hypertensive encephalopathy
(d) Obstructive uropathy

**74.** A two year old child with acute watery diarrhea and severe dehydration presents to the emergency. Which of the following is the most appropriate initial treatment?
(a) Ringer lactate at 30 ml/kg given intravenously in 30 minutes
(b) Oral rehydration solution through nasogastric tube
(c) Ringer lactate at 10 ml/kg given intravenously in 2 hours
(d) Normal saline at 10 ml/kg given intravenously in 2 hours

**75.** A diagnosis of steroid dependent nephrotic syndrome is made in a 5 year old male child and he is initiated on a drug. After 6 weeks of therapy, he develops nausea, vomiting, neutropenia and gross hematuria. Which of the following is the most likely drug used?
(a) Cyclophosphamide
(b) Levamisole
(c) Cyclosporine
(d) Prednisolone

**76.** Consider the following statements regarding distal renal tubular acidosis:
1. Blood biochemistry reveals normal anion gap metabolic acidosis
2. There is defective secretion of $H^+$ in the distal tubule
3. There may be associated muscle weakness and rickets
4. Children may present with polydipsia and polyuria

Which of the above statements are correct?
(a) 1 only
(b) 2 and 3 only
(c) 2 and 4 only
(d) 1, 2, 3 and 4

**77.** One year old male child presents with poor urinary stream and dribbling of urine since birth. A mass is palpable mass just above the symphysis pubis. The most likely diagnosis is:
(a) Tumor of the urinary bladder
(b) Posterior urethral valve
(c) Ureterocele
(d) Neuroblastoma

**78.** A 4 years old child presents with rash on lower limbs, arthritis, and abdominal pain. Urine examination reveals microscopic hematuria. The most likely diagnosis is:
(a) Thrombasthenia
(b) Idiopathic thrombocytopenic purpura
(c) Systemic lupus erythematosus
(d) Henoch Schonlein purpura

**79.** The following milestones can be achieved by a 12 month old infant except:
(a) Wave “bye bye
(b) Speak “mama, “baba, “dada
(c) Make a tower of 6 blocks
(d) Stand without support

**80.** Which one of the following is not a feature of severe combined immunodeficiency in children?
(a) Enlarged thymus
(b) Decreased serum immunoglobulin levels
(c) Defective T cell function
(d) Recurrent pulmonary infections

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**98.** Which one of the following is not used as a food preservative?
(a) Benzoic acid
(b) Citric acid
(c) Ethylene dichloride
(d) Sodium chloride

**99.** Which one of the following is located in Bastar region?
(a) Bandhavgarh National Park
(b) Kanha National Park
(c) Indravati National Park
(d) Seshachalam Biosphere Reserve

**100.** Water hyacinth is generally perceived as a notorious aquatic weed, but it can be a useful plant. Which of the following statements is/are correct in this context?
1. This plant contains certain substances which can be extracted and used as medicines, herbicides and pesticides.
2. This plant can be used to remove many heavy metals like Cadmium, Lead and Mercury from water bodies.

Select the correct answer using the codes given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**101.** Use of calcium carbide for the artificial ripening of fruits is banned but it is often reported to be illegally used. What is/are the likely health hazards of exposure to this chemical?
1. Permanent damage to the eyes
2. Pulmonary edema
3. Irritation of mouth, throat and nose

Select the correct answer using the codes given below:
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

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**102.** Which of the following statements is correct regarding Malachite that is used as food adulterant?
(a) It is used for ripening of mangoes and custard apple.
(b) It is used to make green vegetables shiny.
(c) It is added to sugar to increase its volume and weight.
(d) It is added to tea dust to improve its flavour.

**103.** Which of the following organs from a brain dead person can be used as donated organs?
1. Heart
2. Kidney
3. Liver

Select the correct answer using the codes given below:
(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

**104.** Which of the following can be a threat to Biodiversity?
1. Global climate change
2. Pests and Pathogens
3. Invasive species

Select the correct answer using the codes given below:
(a) 1, 2 and 3
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1 only

**105.** Which of the following can be used in biomass power plants to produce electricity?
1. Cow dung
2. Rice husk
3. Stalks of wheat

Select the correct answer using the codes given below:
(a) 1 only
(b) 2 and 3 only
(c) 1, 2 and 3
(d) None of these can be used in biomass power plants.

**90.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Vaccine)** | | **List II (Type of vaccine)** |
|---|---|---|---|
| A | Hepatitis B vaccine | 1 | Live attenuated vaccine |
| B | Diphtheria vaccine | 2 | Sub unit vaccine |
| C | Haemophilus influenzae vaccine | 3 | Toxoid |
| D | Measles vaccine | 4 | Polysaccharide vaccine |

Code:
(a) A-1 B-4 C-2 D-3
(b) A-2 B-3 C-4 D-1
(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-2 D-4

**91.** Which of the following are the gases whose presence in high concentration in the lower strata of atmosphere is chiefly responsible for causing the Greenhouse effect?
1. Sulphur dioxide
2. Carbon dioxide
3. Chlorofluorocarbons
4. Nitrogen

Select the correct answer using the code given below:
(a) 1 and 2
(b) 2 and 3
(c) 3 and 4
(d) 2 and 4

**92.** Consider the following electric lamps:
1. C F L
2. Incandescent bulb
3. L E D lamp

Indiscriminate or improper disposal of which of the above causes/ cause mercury pollution in the environment?
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**93.** Consider the following substances:
1. Acesulfame potassium
2. Polyethylene glycol
3. Saccharin
4. Sucralose

Which of the above are used as sugar substitutes in foods?
(a) 1 and 2 only
(b) 2, 3 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

**94.** Ozone is
(a) an isotope of Oxygen
(b) an isomer of Oxygen
(c) an allotrope of Oxygen
(d) a hydrate of Oxygen

**95.** Which of the following contributes/contribute to the burst of monsoon in India?
1. Intense heating of the north-west part of Indian sub-continent during summer
2. Steep pressure gradient between the Indian Ocean and the Indian landmass

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**96.** In India, which one of the following determines the principles that should govern the grants-in-aid to the States?
(a) Inter-State Council
(b) Ministry of Finance
(c) Finance Commission
(d) Planning Commission

**97.** Which one of the following is a Human Right as well as a Fundamental Right under the Constitution of India?
(a) Right to Information
(b) Right to Education
(c) Right to Work
(d) Right to Housing

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contraceptive levels. Therefore, carbamazepine is considered the least ideal among these options when contraceptive reliability is crucial.

14. (c) Starts with macronodular and later on changes to micronodular cirrhosis.

Alcoholic cirrhosis is classically described as a micronodular cirrhosis, particularly in its earlier stages, though nodules can become larger or mixed later. It is not typical for alcoholic cirrhosis to begin as macronodular and then shift to micronodular—if anything, the transition can go the other way around. Coexisting alcoholic hepatitis is indeed common, and concomitant infections (like HIV) worsen disease progression. Also, a significant percentage of alcoholic cirrhosis cases can remain asymptomatic ("silent") until later.

15. (b) Atrial fibrillation

Ventricular fibrillation is a fatal arrhythmia often causing sudden cardiac arrest. Massive acute myocardial infarction may progress to fatal pump failure or ventricular arrhythmias leading to arrest. A significant pulmonary embolism can also result in obstructive shock and cardiac standstill. Atrial fibrillation, while it can cause hemodynamic instability in vulnerable patients, generally does not outright cause immediate cardiac arrest; many patients live with chronic AF for years. Therefore, among these options, AF is the least likely direct cause of cardiac arrest.

16. (d) Carbamazepine

Initial acute management of status epilepticus typically involves intravenous benzodiazepines (e.g. lorazepam, diazepam), followed by IV antiepileptics such as phenytoin/fosphenytoin or phenobarbital if seizures persist. Carbamazepine is commonly used orally for partial and generalized tonic–clonic seizures in a chronic setting, but it lacks a rapid IV formulation suitable for emergent cessation of ongoing seizures, making it less appropriate for acute status epilepticus management.

17. (d) Metabolic alkalosis

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In acute renal failure, dialysis (renal replacement therapy) is indicated for life-threatening hyperkalemia, significant fluid overload with pulmonary edema risk, and serious uremic complications such as pericarditis or encephalopathy. Metabolic acidosis can also be an indication if severe. However, metabolic alkalosis is not typically managed with dialysis in ARF unless there are other simultaneous life-threatening features. Therefore, among the listed choices, metabolic alkalosis alone is not a routine indication for urgent renal replacement therapy.

18. (a) 200 Joules

Current Advanced Cardiac Life Support (ACLS) guidelines for biphasic defibrillators recommend an initial shock of around 200 Joules for ventricular fibrillation or pulseless ventricular tachycardia (although some biphasic devices specify a slightly lower or higher starting dose). Subsequent defibrillations may be given at equal or higher energies, but the typical starting point is 200 J with biphasic waveform machines. Older monophasic defibrillators often required 360 J for all shocks.

19. (b) Cor pulmonale

Gastric erosions or peptic ulcer-like lesions often accompany conditions that involve stress, altered mucosal blood flow, or increased histamine release. Polycythemia rubra vera is linked to an increased incidence of peptic ulcers (possibly through elevated histamine levels), and liver cirrhosis can cause portal hypertensive gastropathy leading to erosions. Pernicious anemia involves chronic atrophic gastritis and can predispose to mucosal changes. Cor pulmonale (right-sided heart failure primarily from lung disease) is not typically associated with gastric erosions.

20. (c) Granulomatous hepatitis

Wegener's granulomatosis (now termed Granulomatosis with polyangiitis) is a necrotizing granulomatous vasculitis classically affecting the upper and lower respiratory tracts and the kidneys (glomerulonephritis). Ocular involvement such as scleritis or uveitis can occur. However, granulomatous hepatitis is

**106.** Why are phosphates added to soft drinks?
(a) To give the drinks a tangy taste.
(b) To add sparkle to the drinks.
(c) To supplement the drinks with certain mineral nutrients.
(d) To give dark brown or chocolate colour to the drinks.

**107.** With reference to electrical and electronic equipment or components, the e–waste (Management and Handling) Rules, 2011 apply to:
1. Consumers
2. Producers
3. Collection centres
Select the correct answer using the codes given below:
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**108.** Which of the following can be made by using biodegradable polymers?
(a) Artificial lens of the eye
(b) Artificial blood vessels
(c) Artificial teeth
(d) Artificial intestine

**109.** The Eastern Ghats and Western Ghats meet at
(a) Anaimalai hills
(b) Cardamom hills
(c) Nallamala hills
(d) Nilgiri hills

**110.** Consider the following statements:
1. Panchayati Raj is a four tier system of governance.
2. There is a reservation of seats for women in Panchayati Raj elections.
3. Members of Gram Panchayat can convene Lok Adalat.
Which of the statements given above is/are correct?
(a) 1 and 2 only
(b) 2 only
(c) 3 only
(d) 1, 2 and 3

**111.** If you wish to see Pandas and Gibbons in their natural habitat in India, which of the following regions do you have to travel to?
(a) Western Himalayas
(b) Eastern Himalayas
(c) Western Ghats
(d) Eastern Ghats

**112.** Consider the following provisions of the Constitution of India:
1. Directive Principles of State Policy
2. Rural and Urban Local Bodies
3. Centre–State Relations
Which of the above has/ have a bearing on education?
(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

**113.** In which of the following cancers is it shown initially that the disruptive micronuclei can trigger DNA damage on chromosomes and can be a potential biomarker for genetic instability?
(a) Non small cell lung cancer
(b) Small cell lung cancer
(c) Breast cancer
(d) Colon cancer

**114.** Who is the President of the Council of Scientific and Industrial Research (CSIR)?
(a) The President of India
(b) The Vice President of India
(c) The Prime Minister of India
(d) Union Minister of Science and Technology

**115.** Which of the following animals are found in India in their natural habitat?
1. Flying fox
2. Puma
3. Snow Leopard
Select the correct answer using the code given below:
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only

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**81.** Children with an autosomal recessive condition have partial albinism, susceptibility to infections and presence of giant peroxidase positive lysosomal granules in granulocytes. What is the most probable diagnosis?
(a) Chediak Higashi syndrome
(b) Hermansky Pudlak syndrome
(c) Piebaldism
(d) Waardenburg's syndrome

**82.** A 50 hours old full term breast–fed newborn boy weighing 3100 g presents with jaundice. Physical examination is normal. The total serum bilirubin is 11.0 mg/dL with a direct bilirubin of 0.4 mg/dL. The correct treatment would be to:
(a) Continue breast feeds and review after 48 hours
(b) Stop breast feeds and review after 24 hours
(c) Continue breast feeds and start blue–light phototherapy
(d) Arrange for a double volume exchange transfusion

**83.** Which one of the following pairs is not correctly matched?
(a) Vitamin B6 — Beriberi
(b) Vitamin B3 — Pellagra
(c) Vitamin B12 — Subacute combined degeneration of cord
(d) Vitamin B5 — Burning feet syndrome

**84.** Match List I with List II and select the correct answer using the code given below the lists:

| | **List I (Congenital malformation syndrome)** | | **List II (Congenital heart defect)** |
|---|---|---|---|
| A | Foetal alcohol syndrome | 1 | Bicuspid aortic valve |
| B | Turner's syndrome | 2 | Endocardial cushion defect |
| C | Down syndrome | 3 | Pulmonary stenosis |
| D | Congenital rubella syndrome | 4 | Ventricular septal defect |

Code:
(a) A-3 B-2 C-1 D-4
(b) A-3 B-1 C-2 D-4
(c) A-4 B-1 C-2 D-3
(d) A-4 B-1 C-2 D-3

**85.** A 12 months old baby boy weighs 4.5 kg and measures 60 cm. He has marked loss of subcutaneous fat and has no edema. What form of protein energy malnutrition does the baby have?
(a) Grade III protein energy malnutrition
(b) Grade IV protein energy malnutrition with K
(c) Marasmic Kwashiorkar
(d) Marasmus

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**86.** Which of the following pairs is not correctly matched?
(a) Turner's syndrome — 45, X
(b) Down syndrome — 47, XY, +21
(c) Klinefelter's syndrome — 47, XXY
(d) Marfan's syndrome — 47, XYY

**87.** Which of the following is the most reliable test for screening hemophilia?
(a) Prothrombin time
(b) Clotting time
(c) Partial thromboplastin time
(d) Clot retraction

**88.** A child with poliomyelitis in acute phase can have all the following except:
(a) Painful affected extremity
(b) Sensory loss
(c) Hypotonia
(d) Depressed deep tendon reflexes

**89.** Which one of the following antibodies is most specific in children with systemic lupus erythematosus?
(a) Anti neutrophil cytoplasmic antibody
(b) Anti myeloperoxidase antibody
(c) Anti double stranded DNA antibodies
(d) Anti histone antibodies

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(d) 1, 2 and 3

**116.** Which of the following is/are used as decoloring agent in the refinement of sugar?
1. Dimethylamine epichlorohydrin copolymer
2. Sodium stearoyl lactylate

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**117.** Consider the following crops of India:
1. Groundnut
2. Sesamum
3. Pearl millet

Which of the above is/are predominantly rainfed crops?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3

**118.** Araku valley is in:
(a) Eastern Ghats
(b) Western Ghats
(c) North-east India
(d) Central India

**119.** Which one among the following types of forests exhibits highest biodiversity?
(a) Moist deciduous forest
(b) Tropical rain forest
(c) Scrub forest
(d) Dry deciduous forest

**120.** Which one of the following best describes the phenomenon of El Nino?
(a) The anomalous widespread warming of the sea surface of tropical east and central Pacific Ocean
(b) The revolving tropical storms of the Caribbean and Gulf of Mexico
(c) The deflection of the ocean currents in the northern and southern hemisphere due to the rotation of Earth
(d) A violent rotating column of air extending from a thunderstorm to the ground

**END**

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Hence, the statement that PIP involvement exceeds DIP involvement is not correct.

7. (d) 1 and 3

Rheumatic carditis involves all three layers of the heart—endocardium, myocardium, and pericardium—making it a "pancarditis" (statement 1). Mitral regurgitation is indeed the most common valvular manifestation in acute rheumatic fever (statement 3). However, the Carey–Coombs murmur is classically described as a mid-diastolic murmur (sometimes short) rather than a "delayed systolic" murmur, so statement 2 is incorrect. Accordingly, only statements 1 and 3 are correct.

8. (a) 0.9 % NaCl

In diabetic ketoacidosis, the principal initial management step involves correcting the significant extracellular fluid deficit caused by osmotic diuresis. Normal saline (0.9% NaCl) is the standard fluid of choice to restore intravascular volume and stabilize hemodynamics. Hypertonic saline (3% NaCl) is generally reserved for severe, symptomatic hyponatremia, and 5% dextrose is introduced only after partial correction of hyperglycemia. Ringer's lactate may sometimes be used, but normal saline remains the most commonly recommended first-line fluid.

9. (c) Megaloblastic anaemia

A high reticulocyte count generally indicates a robust bone marrow response to anemia. Hemolytic anemias elevate the reticulocyte count due to ongoing RBC destruction and compensatory production. Acute blood loss also stimulates increased reticulocyte output (usually noticeable a few days after hemorrhage). Response to nutritional therapy in iron or vitamin deficiency likewise triggers a reticulocyte surge. In untreated megaloblastic anemia, however, ineffective erythropoiesis typically prevents a significant rise in reticulocytes, making it the exception here.

10. (b) Donor cells have normal survival.

An intracorpuscular defect (e.g., hereditary spherocytosis, thalassemia) is a problem inherent within the patient's own red blood cells. Because the defect resides in the RBC membrane or hemoglobin produced by that individual, transfusing normal donor RBCs (which lack that intrinsic abnormality) typically results in normal survival of the transfused cells. By contrast, with an extracorpuscular defect (e.g., autoimmune hemolysis), even normal donor RBCs would be destroyed.

11. (a) Osteoporosis

Serum alkaline phosphatase (ALP) typically reflects activity in bone (osteoblasts) and the biliary tract. It is raised in conditions involving high bone turnover, such as osteomalacia and Paget's disease, and in cholestatic liver disorders, where bile flow is obstructed. However, osteoporosis involves a reduction in bone mass without a marked increase in osteoblastic activity, so ALP generally remains normal in uncomplicated osteoporosis. Hence, option (a) is the condition where ALP does not usually elevate.

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12. (d) Starvation ketosis – Glucagon

Uraemic acidosis is treated with dialysis when severe, methanol poisoning may be managed with ethanol (or fomepizole), and hyperosmolar states are corrected by careful intravenous fluids. Starvation ketosis arises from prolonged fasting, where insulin decreases and glucagon is endogenously elevated, driving ketone formation. However, administering exogenous glucagon to manage starvation ketosis is not standard. Typically, providing carbohydrates (glucose) and addressing nutritional deficiency is the actual treatment. Therefore, "Starvation ketosis – Glucagon" is not a correct management pairing.

13. (a) Carbamazepine

Carbamazepine induces hepatic enzymes that metabolize oral contraceptive hormones, potentially leading to contraceptive failure. Women taking enzyme-inducing antiepileptic drugs (like carbamazepine, phenytoin, barbiturates) often require higher contraceptive doses or alternative methods to maintain efficacy. Sodium valproate, topiramate (at lower doses), and ethosuximide are less likely to reduce oral

# PAPER 2014 ANSWERS

1. (d) Syndrome of inappropriate ADH

Small cell lung carcinoma is well known for producing ectopic hormones, most notably antidiuretic hormone (ADH). The excessive ADH secretion leads to water retention and dilutional hyponatremia, a condition described as the syndrome of inappropriate ADH secretion (SIADH). Among the given choices, this paraneoplastic phenomenon is the most common cause of symptomatic hyponatremia in patients with small cell lung cancer. Neither Fanconi syndrome, Cushing's syndrome, nor metabolic syndrome are typically linked to small cell lung cancer–associated hyponatremia.

2. (a) Jaundice becomes severe with time.

Gilbert's syndrome is a mild unconjugated hyperbilirubinemia typically exacerbated by stress factors such as fasting, illness, or strenuous exercise. It is inherited in an autosomal dominant pattern, and the liver architecture remains normal on histological examination. Jaundice in Gilbert's syndrome is generally mild and does not progressively worsen over time. Hence, the statement that jaundice becomes severe with time is incorrect, making option (a) the not-correct choice.

3. (b) Porphyria

Autonomic dysfunction can occur in several neurological and systemic conditions. Guillain-Barré syndrome frequently involves both motor and autonomic fibers. Diabetes is a well-known cause of autonomic neuropathy, often affecting cardiovascular and gastrointestinal regulation. Vitamin B12 deficiency can lead to peripheral neuropathy that sometimes includes autonomic components. In contrast, porphyria, although it can have many neurological manifestations (particularly acute intermittent porphyria), is a comparatively rare cause of outright autonomic dysfunction, making it the "uncommon" option among the listed choices.

4. (a) Hypersensitivity pneumonitis.

Peripheral eosinophilia is classically associated with certain parasitic infections (e.g., tropical eosinophilia), allergic conditions (e.g., allergic bronchopulmonary aspergillosis), and transient pulmonary infiltrates like Loeffler's syndrome. In contrast, hypersensitivity pneumonitis (also called extrinsic allergic alveolitis) is primarily mediated by immune complex and T-cell–driven inflammation, usually showing neutrophils, lymphocytes, and occasional granuloma formation rather than marked eosinophilia. Thus, option (a) is the one that does not characteristically feature peripheral eosinophilia.

5. (a) 1 and 2 only

Salicylate (aspirin) overdose commonly leads to a characteristic pattern: an early, marked respiratory alkalosis due to direct stimulation of the respiratory center (causing hyperventilation), which often evolves into a mixed acid–base disturbance featuring both respiratory alkalosis and a high-anion-gap metabolic acidosis. However, this metabolic acidosis is typically an increased anion gap type rather than a hyperchloremic (normal anion gap) metabolic acidosis. Therefore, statements 1 and 2 are correct, while statement 3 does not reflect the usual acid–base derangements in salicylate toxicity.

6. (c) Involvement of PIP joints is more than DIP joints.

Psoriatic arthritis typically involves the distal interphalangeal (DIP) joints, often distinguishing it from rheumatoid arthritis, which primarily affects the proximal interphalangeal (PIP) joints. In most psoriatic arthritis patients, the characteristic pattern is asymmetric arthritis with prominent DIP joint involvement, and skin lesions (psoriasis) commonly precede joint symptoms. "Cup-like" or "pencil-in-cup" erosions on X-ray are also classically described.

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not commonly described as a hallmark of this disease. The combination of sinus, lung, and renal lesions is most characteristic, along with a positive c-ANCA (anti-PR3) in many patients.

**21.** (c) Defect in common pathway

Prothrombin time (PT) assesses the extrinsic and common coagulation pathways (factors I (fibrinogen), II (prothrombin), V, X). Activated partial thromboplastin time (aPTT) checks the intrinsic and common pathways. When both PT and aPTT are prolonged, the defect is likely in the factors shared by both pathways (the "common pathway"). A purely extrinsic defect would prolong PT only; an intrinsic defect would prolong aPTT only; platelet dysfunction would not directly affect PT or aPTT.

**22.** (d) Pleural effusion is a common finding.

Sarcoidosis on chest X-ray classically shows bilateral hilar lymphadenopathy (often symmetrical) and a preference for upper lobe involvement. "Eggshell" calcification of lymph nodes, though not universal, is also a recognized feature. In contrast, pleural effusions are relatively uncommon in sarcoidosis and are not considered a typical radiographic finding. Hence, the statement that pleural effusion is a common finding is the incorrect one among the listed options.

**23.** (c) Group A streptococcus

Acute rheumatic fever follows an infection by specific strains of Group A beta-hemolytic streptococci, commonly affecting the throat (e.g., Streptococcus pyogenes). After a latent period, the immune-mediated process leads to the characteristic clinical features of rheumatic fever (such as carditis, migratory polyarthritis, etc.). Streptococcus pneumoniae and the other listed organisms do not cause the classic syndrome of acute rheumatic fever. Hence, Group A streptococcus remains the well-established etiological agent.

**24.** (c) Indigestion

Major recognized complications of peptic ulcers include hemorrhage (upper GI bleeding), perforation (leading to peritonitis), and gastric outlet obstruction due to scarring or pyloric narrowing. While "indigestion" (dyspepsia) is a common symptom or presenting complaint of peptic ulcer disease, it is not classified as a complication; rather, it is part of the initial clinical presentation. The other three (bleeding, perforation, obstruction) are well-defined and potentially severe complications of untreated or inadequately managed peptic ulcer.

**25.** (a) A- 1, B-4, C-2, D-3

Rocky Mountain spotted fever (A) is transmitted by tick bites (1). Q fever (B), caused by Coxiella burnetii, often results from inhalation of dried infected materials (4). Rickettsial pox (C) is transmitted by mites (2). Epidemic typhus (D) is spread by the human body louse, with infected louse feces entering through broken skin (3). Therefore, the correct matching sequence is A→1, B→4, C→2, D→3.

**26.** (a) A-4 B-1 C-2 D-3

Osler's nodes (A) are painful nodules on fingers or toes, typically seen in subacute bacterial endocarditis (4). Differential cyanosis (B) occurs with patent ductus arteriosus (PDA) when shunt reversal (Eisenmenger syndrome) causes lower limb but not upper limb cyanosis (1). A bisferiens pulse (C) is commonly associated with aortic stenosis plus aortic regurgitation (2). Graham Steel murmur (D) is a high-pitched diastolic murmur of pulmonary regurgitation in pulmonary hypertension (3).

**27.** (a) 1, 2 and 3

Renal tubular acidosis (RTA) typically presents with a normal anion gap (1) metabolic acidosis. This normal anion gap is often accompanied by hyperchloremia (2). Additionally, because the renal tubules cannot appropriately secrete acid, urine pH remains inappropriately high (>5.4) despite systemic acidosis (3). These three features help distinguish RTA from other causes of metabolic acidosis, which may involve elevated anion gaps or different urine acidification patterns.

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**28.** (d) 1, 3 and 4

Parkinsonian patients typically show a masked face, bradykinesia, a shuffling or festinating gait (4), and a reduced arm swing (1). Rigidity, which can manifest as "cogwheel" rigidity (3), is another hallmark. Nystagmus (2) is not a characteristic feature of Parkinson's disease; it can appear in various cerebellar or vestibular disorders but is not routinely tied to parkinsonian syndromes. Hence, 1, 3, and 4 together fit the classical signs of Parkinsonism.

**29.** (c) 1, 2 and 4

Acromegaly is often associated with insulin resistance; hence skin tags (fibroma molluscum) and sometimes acanthosis nigricans (1) are indeed fairly common. A paradoxical increase in growth hormone secretion after TRH administration (2) is a recognized biochemical anomaly in acromegaly. Around 20–25% of acromegaly patients may develop overt diabetes mellitus (4). While characteristic hand X-rays show bone thickening and "tufting," true acro-osteolysis (resorption of distal phalanges) is not typically a common finding. Thus, 1, 2, and 4 are the correct statements.

**30.** (b) Diffuse nephritis

Lupus nephritis is classified into several histological patterns (Classes I to VI), with "diffuse proliferative nephritis" (Class IV) being the most severe form. It involves widespread immune complex deposition and inflammation in the majority of glomeruli. Clinically, it can present with severe renal dysfunction and has the highest likelihood of leading to end-stage renal disease if untreated. In comparison, minimal mesangial (Class I), focal segmental (Class III), and membranous (Class V) forms typically have better renal outcomes.

**31.** (a) Beta blockers

Hypomagnesemia can arise from reduced intake, malabsorption, or excessive losses. Chronic pancreatic insufficiency (b) leads to malabsorption of fats and micronutrients, including magnesium. Poorly controlled diabetes mellitus (c) produces osmotic diuresis and magnesium wasting. Alcoholism (d) is a well-recognized cause due to poor dietary intake and gastrointestinal/renal losses. Beta blockers (a) are not classically associated with significant magnesium depletion. Diuretics, for example, are more notorious for causing electrolyte losses.

**32.** (d) Milk

Dietary iron is found abundantly in organ meats (like liver), animal proteins (fish, poultry, red meat), and plant sources including certain seeds, pulses, and even jaggery (unrefined sugar cane). Milk, though nutritionally beneficial in other aspects (calcium, protein), is generally poor in iron content. Children relying heavily on cow's milk are at risk of iron deficiency due to low iron density in milk. Hence, (d) Milk is the option that is not considered a good source of dietary iron.

**33.** (b) A-2 B-1 C-4 D-3

Benzodiazepine overdose (A) is reversed by flumazenil (2), copper sulphate toxicity (B) is managed by D-penicillamine (1), opioid overdose (C) is reversed by naloxone (4), and paracetamol poisoning (D) is treated with N-acetylcysteine (3). Matching these correctly yields the sequence A→2, B→1, C→4, D→3.

**34.** (c) Giant cell arteritis

Also known as temporal arteritis, giant cell arteritis typically affects older adults and often presents with a new-onset, localized (often unilateral) headache, fever or systemic symptoms, and a markedly elevated ESR. Jaw claudication and visual disturbances can also occur. Tubercular meningitis, migraine, or intracranial mass lesions are less likely in this specific scenario of high ESR plus unilateral temporal-area headache in an elderly patient.

**35.** (c) Hyperkalemic periodic paralysis

Certain genetic ataxias (e.g., episodic ataxia type 2, spinocerebellar ataxia type 6) involve mutations in calcium channel subunits. Hypokalemic periodic paralysis can also stem from abnormalities in calcium channel genes (e.g., CACNA1S). By contrast, hyperkalemic periodic paralysis typically results from sodium channel defects (often in SCN4A). Hence,

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among the listed conditions, hyperkalemic periodic paralysis is not caused by a primary calcium channel mutation.

**36.** (a) Ethacrynic acid

Loop diuretics act at the thick ascending limb of the loop of Henle to inhibit the $Na^+$-$K^+$-$2Cl^-$ symporter. Common examples include furosemide, bumetanide, torsemide, and ethacrynic acid. Spironolactone (b) is a potassium-sparing aldosterone antagonist, indapamide (c) is a thiazide-like diuretic acting primarily in the distal convoluted tubule, and (d) "Thiazide" refers broadly to the thiazide diuretic class (e.g., hydrochlorothiazide).

**37.** (d) Extension plantar response

Wernicke's encephalopathy classically presents with the triad of confusion, ophthalmoplegia (or nystagmus), and ataxia. Horizontal nystagmus is common, and a confusional state is practically universal. While various neurological signs may appear with severe thiamine deficiency (including decreased consciousness or memory impairment), an extensor plantar (Babinski) response is not a hallmark feature. Therefore, (d) is the "except" choice.

**38.** (d) Low serum potassium

Hepatorenal syndrome involves acute kidney injury in advanced liver disease, with intense renal vasoconstriction and sodium (and water) retention. Patients typically have hypotension (due to splanchnic vasodilation and poor effective circulation), acute renal failure, and markedly low urinary sodium (<10 mEq/L) because of avid sodium reabsorption. Hyperaldosteronism is often present, favoring potassium loss; however, in practice, advanced renal failure can also produce hyperkalemia. Purely "low serum potassium" as a reliable feature is not characteristic of hepatorenal syndrome.

**39.** (d) Pulmonary artery

Takayasu's arteritis—often called "pulseless disease"—primarily affects the aorta and its main branches: the subclavian arteries, the common carotid arteries, and can involve the abdominal aorta as well. While the pulmonary artery can be involved in some cases, it is significantly less common in comparison to the aortic arch branches. Thus, among the listed vessels, the pulmonary artery is considered the least frequently affected (the "except") site.

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**40.** (d) 1 and 4

Clubbing is especially associated with infective endocarditis (1), many chronic pulmonary diseases, and certain congenital heart defects that cause right-to-left shunts. Ebstein anomaly (4) can involve significant tricuspid valve malformation leading to cyanosis and a right-to-left shunt across an atrial septal defect, which often presents with clubbing. Simple congestive heart failure (2) or acute pulmonary thromboembolism (3) are not known for classical clubbing.

**41.** (b) Temporal lobe

Herpes Simplex Virus (HSV) encephalitis characteristically affects the temporal lobes (and sometimes the inferior frontal lobes), leading to fever, seizures, altered mental status, and often focal neurological signs involving memory and language. MRI and EEG changes typically emphasize the temporal regions. This localization is so classic that temporal lobe involvement on imaging immediately raises suspicion of HSV encephalitis.

**42.** (a) 1, 2 and 3

Staphylococcal pneumonia in infants can be severe, with a high proportion of cases occurring in children under one year (1). Pneumatoceles (air-filled cavities) are a known complication (2). Staph aureus is also a very common cause of empyema in children under two (3). However, it typically requires aggressive inpatient management (IV antibiotics), so describing it as "easily amenable to treatment in the outdoors" (i.e. outpatient) is inaccurate. Thus, statements 1, 2, and 3 are correct.

**43.** (c) Tricuspid regurgitation

Carcinoid syndrome often releases vasoactive substances into the systemic circulation but

lens dislocation is more characteristic of homocystinuria, not Marfan's.

**59.** (d) Hyponatraemia

Tetany arises from reduced ionized calcium or from changes that mimic hypocalcemia (e.g., alkalosis shifting calcium binding). Hyperventilation leads to respiratory alkalosis and can trigger carpopedal spasm. Hypokalemic alkalosis also lowers ionized calcium, and hypomagnesemia can impair parathyroid hormone release, causing hypocalcemia/tetany. Hyponatremia, per se, does not generally cause tetany; it produces neurological symptoms more related to fluid shifts than to neuromuscular irritability.

**60.** (c) Its routine prophylaxis in newborn children is recommended to prevent early haemorrhagic disease

Vitamin K is a fat-soluble vitamin, not water-soluble, and body stores do not last for many years. Routine newborn prophylaxis (an intramuscular vitamin K injection) is crucial to prevent hemorrhagic disease of the newborn. While vitamin K can help correct coagulopathy in certain settings (e.g., warfarin overdose or deficiency), it is not the primary emergency therapy for acute severe hemoptysis. Thus, the only correct statement is that newborn prophylaxis is recommended.

**61.** (b) 1, 2 and 3 only

Dementia involves cognitive impairment (especially memory), plus deficits in executive function (impaired judgment), personality changes, and other higher cortical functions. However, consciousness is usually clear in dementia (at least until very late stages or superimposed delirium). "Clouding of consciousness" (4) is more typical of acute confusional states (delirium). Hence, 1, 2, and 3 are features of dementia, making (b) correct.

**62.** (c) Psoriasis

Koebner's (isomorphic) phenomenon is the tendency for new skin lesions to appear at sites of trauma in certain dermatologic conditions. It is classically described in psoriasis, where scratching or skin injury can precipitate fresh psoriatic plaques. It is also noted in some other diseases (e.g., lichen planus), but among the listed options, psoriasis (c) is the classic association.

**63.** (b) Anti HBc

For acute Hepatitis B, the most specific serologic marker is IgM anti-HBc (the "core" antibody). HBsAg merely indicates active infection (whether acute or chronic). HBeAg is more a measure of infectivity/viral replication. HBcAg is not readily detectable in serum. Therefore, detection of (IgM) anti-HBc is the key test to confirm recent/acute infection.

**64.** (d) Renal tubular acidosis

High-anion-gap metabolic acidosis typically arises from accumulations of organic acids or toxins (e.g., lactic acidosis, ketoacidosis, methanol poisoning). Renal tubular acidosis (RTA), however, usually presents with a normal (hyperchloremic) anion gap. RTA is characterized by problems in renal acid handling (distal or proximal), but not by large amounts of unmeasured anions that would elevate the anion gap.

**65.** (d) Meningococcal meningitis

Japanese encephalitis (a) is transmitted by mosquitoes, dengue fever (b) likewise by Aedes mosquitoes, and kala-azar (leishmaniasis) (c) by the sand fly. Meningococcal meningitis, caused by Neisseria meningitidis, spreads through respiratory droplets or close contact, not by an arthropod vector.

**66.** (a) Treatment must begin after biochemical confirmation of the diagnosis

Myxedema coma is a life-threatening emergency in hypothyroid patients. Immediate treatment is essential; one cannot safely wait for laboratory confirmation before starting IV levothyroxine and supportive measures. IV levothyroxine (b), gradual rewarming (c), and cautious IV fluids (d) are all correct strategies. Thus, (a) is false because therapy should commence immediately, based on clinical suspicion.

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valve subacute endocarditis, and HAECK organisms are less common.

**51.** (c) Thickened peripheral nerve

Tuberculoid leprosy (the paucibacillary pole) is marked by a strong cell-mediated immune response, few lesions containing very few organisms, a positive lepromin test, and often significant nerve enlargement with patchy anesthesia. Leonine facies (a), negative lepromin tests (b), and abundant bacilli (d) are more characteristic of lepromatous leprosy. Hence, tuberculoid disease is most likely associated with thickened peripheral nerves (c).

**52.** (d) Purpura is seen all over the body especially the upper limbs.

Henoch–Schönlein purpura (IgA vasculitis) usually involves small vessels and frequently follows a respiratory infection (thus making (a) correct). Renal involvement (b) occurs in a significant minority of patients (around 40%). By definition it is a small-vessel vasculitis (c). Classically, the raised purpuric lesions tend to appear over buttocks and lower extremities rather than "all over the body, especially upper limbs." Thus, statement (d) is the incorrect one among the listed options.

**53.** (a) Females are more commonly affected than males.

Cluster headaches are known for severe unilateral orbital/temporal pain, often accompanied by autonomic features (lacrimation, nasal congestion, ptosis) and a tendency to occur in clustered episodes over weeks. They characteristically affect men more frequently than women (opposite of migraine). Unilateral photophobia and periodicity are indeed typical. Thus, the statement that "females are more commonly affected" is not correct.

**54.** (a) Autosomal dominant

MODY encompasses a group of monogenic forms of diabetes, often presenting in adolescence or early adulthood but not requiring insulin initially. It typically shows autosomal dominant inheritance (each generation can be affected). This contrasts with type 1 or type 2 diabetes, which are more polygenic/multifactorial. Hence, the correct choice for MODY's inheritance pattern is autosomal dominant.

**55.** (b) Pleural effusion

A Ghon's complex in primary pulmonary tuberculosis comprises a subpleural parenchymal lesion (the Ghon focus) plus involvement of the associated draining lymph nodes, typically the hilar nodes, often with inflamed lymphatic channels connecting them. A pleural effusion can occur in TB, but it is not considered part of the classic Ghon's complex triad. Thus, (b) is not a defining characteristic of Ghon's complex.

**56.** (a) A-4 B-3 C-1 D-2

1. Red cell casts (A) → glomerulonephritis (4).
2. Microscopic hematuria (B) → often seen in polycystic kidney disease (3).
3. Proteinuria (C) → hallmark of nephrotic syndrome (1).
4. Broad (so-called "renal failure") casts (D) → chronic renal failure (2).

Hence A→4, B→3, C→1, D→2 matches option (a).

**57.** (d) Babinski plantar response

Guillain–Barré syndrome is an acute inflammatory demyelinating polyradiculoneuropathy primarily affecting lower motor neurons. Classic findings include areflexia or markedly diminished reflexes, an elevated CSF protein with normal cell count (albumino–cytological dissociation), and possible transient autonomic/bladder disturbances. An extensor (Babinski) plantar sign typically signifies upper motor neuron lesions, thus not a usual feature of GBS.

**58.** (a) Lens of the eye is dislocated downward

In Marfan's syndrome, the lens typically dislocates upward and outward (ectopia lentis), there is a Fibrillin 1 (FBN1) gene defect, and the body habitus leads to a lower-segment predominance (long legs), so the ratio of upper to lower segment < 1 is often observed. Downward

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primarily affects the right side of the heart first (since the lungs inactivate many of these substances). The fibrotic changes commonly occur on the tricuspid valve, producing tricuspid regurgitation, and also on the pulmonary valve (leading to pulmonary stenosis). Left-sided lesions (mitral/aortic) are less common unless there is a right-to-left shunt or severe bronchial carcinoid.

**44.** (d) 1, 2 and 3

Sodium is reabsorbed along most of the nephron, but the major sites are the proximal convoluted tubule (1), the thick ascending limb of the loop of Henle (3), and the distal convoluted tubule (2). While the collecting duct can also reabsorb sodium (especially under aldosterone), in many standard classifications the primary recognized segments for bulk $Na^+$ uptake are PCT, thick ascending limb, and DCT. Hence option (d) is the best match among those given.

**45.** (b) Systemic sclerosis

Systemic sclerosis (scleroderma) typically causes skin thickening and tightening, especially of the face and hands. Oral aperture narrowing ("microstomia") can make it hard to open the mouth fully, and esophageal involvement causes dysphagia due to collagen deposition in the smooth muscle layer. In contrast, lupus, dermatomyositis, or rheumatoid arthritis do not classically produce such pronounced microstomia plus dysphagia. Therefore, among these choices, systemic sclerosis is the prime suspect.

**46.** (c) Creatinine clearance rate

Glomerular filtration rate (GFR) is the key index of renal function. Creatinine clearance (whether measured directly or estimated) best reflects GFR among the listed options. Blood urea and serum creatinine provide rough estimations but can be affected by hydration, protein intake, or muscle mass. Renal ultrasound (d) is excellent for anatomical assessment but does not accurately quantify filtration. Thus, creatinine clearance is considered the best practical measure of glomerular function.

**47.** (b) Bitemporal hemianopia

Lesions at the optic chiasm classically interrupt the crossing nasal-retinal fibers, which carry temporal visual field information. The result is loss of the outer (temporal) halves of each visual field, producing bitemporal hemianopia. By contrast, lesions behind the chiasm (optic tract, radiation, or occipital cortex) produce homonymous hemianopias (the same half of the visual field in each eye). Uni-ocular vision loss suggests a problem in one optic nerve, and concentric field defects typically indicate generalized retinal or other global optic pathology.

**48.** (a) $2\alpha + 2\beta$

Normal adult hemoglobin (HbA) is typically made up of two alpha and two beta chains ($\alpha_2\beta_2$). There are minor adult hemoglobin variants—$HbA_2$ ($\alpha_2\delta_2$) and fetal hemoglobin (HbF, $\alpha_2\gamma_2$)—but the principal type, comprising the majority of adult hemoglobin, is $\alpha_2\beta_2$. Thus, option (a) reflects the standard composition of main adult hemoglobin.

**49.** (a) 1, 2 and 3

In rheumatoid arthritis, the inflamed joint produces a cloudy, inflammatory synovial fluid (1) with reduced viscosity because of proteolytic breakdown of hyaluronic acid (2). Complement levels in the fluid can be decreased due to consumption in the inflammatory process (3). The predominant white cells in active RA fluid, however, are typically polymorphonuclear leukocytes (PMNs) rather than lymphocytes, making statement 4 incorrect. Hence, 1, 2, and 3 are correct.

**50.** (a) Staphylococcus epidermidis

In early prosthetic valve endocarditis (within 60 days of surgery), Staphylococcus epidermidis (a coagulase-negative Staphylococcus) is most commonly implicated due to its propensity to form biofilms on prosthetic materials. Staphylococcus aureus is also a frequent cause, but S. epidermidis edges it out specifically in the scenario of early prosthetic valve infections. Streptococcus viridans classically causes native-

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**67.** (a) Serum sodium

The main driver of plasma osmolality is serum sodium, owing to its high extracellular concentration and accompanying anions. While glucose and urea also contribute, sodium (together with chloride/bicarbonate) dominates the calculation. Potassium (b) is mostly intracellular, so it has less influence on serum osmolality than sodium.

**68.** (a) Infective endocarditis

Aortic regurgitation can be acute or chronic. Common causes of acute AR include infective endocarditis (valvular destruction), aortic dissection, or traumatic rupture. Conditions like Marfan's syndrome or ankylosing spondylitis more often produce chronic aortic regurgitation. Thus, among these choices, infective endocarditis is the classic cause of a sudden, acute valve insufficiency.

**69.** (a) Myopathy

Vitamin B12 deficiency is known to cause neurological complications such as subacute combined degeneration of the spinal cord (myelopathy), peripheral neuropathy, and sometimes optic atrophy. True "myopathy" (primary muscle fiber pathology) is not a hallmark of B12 deficiency. Hence, (a) is the correct "except."

**70.** (d) Hepatorenal syndrome

Hepatorenal syndrome in end-stage liver disease presents with low urinary sodium (often $< 10$ mEq/L), benign urinary sediment (no RBC casts, no tubular cells), progressive renal failure, and oliguria. It arises from severe vasoconstriction of the renal circulation under the hemodynamic derangements of cirrhosis. This pattern does not fit acute tubular necrosis or glomerulonephritis (which typically show active urinary sediment or higher urinary sodium).

**71.** (b) Congenital hypertrophic pyloric stenosis

In a 3–6 week old infant with projectile, non-bilious vomiting, a palpable "olive-like" mass in the right upper quadrant, and visible gastric peristalsis, pyloric stenosis is highly suggestive. Bilious vomiting would be more typical of lower obstruction (e.g., duodenal atresia past the ampulla). Intussusception often presents a bit older and with colicky pain plus "red currant jelly" stools.

**72.** (c) Acute Epiglottitis

Acute epiglottitis usually presents in young children with sudden high fever, drooling (due to inability to swallow saliva), and severe distress (often "tripod" position, stridor). The child appears toxic and can deteriorate fast. Tonsillopharyngitis (a) tends to cause throat pain but not such dramatic drooling or airway compromise. Tracheo-esophageal fistula (b) is usually congenital and presents earlier in infancy. Laryngeal webs (d) also typically present earlier and not acutely in a healthy toddler.

**73.** (c) Acute glomerulonephritis with hypertensive encephalopathy

Severe hypertension (200/100 mm Hg), new-onset seizures (hypertensive encephalopathy), and findings of hematuria, oliguria, edema strongly suggest acute glomerulonephritis. The normal platelet count argues against hemolytic uremic syndrome (which typically involves thrombocytopenia and microangiopathic hemolysis). Urinary tract infection or obstruction usually do not cause abrupt, severe hypertension with encephalopathy.

**74.** (a) Ringer lactate at 30 ml/kg given intravenously in 30 minutes

A child with severe dehydration typically requires a rapid IV bolus to restore circulatory volume. WHO guidelines often recommend an initial bolus of 20–30 ml/kg of isotonic solution (Normal Saline or Ringer's Lactate) over about 30–60 minutes to stabilize hemodynamics. Oral rehydration (b) is ideal for mild-to-moderate dehydration, but with severe dehydration (and potential shock), immediate intravenous fluid resuscitation at a faster rate is essential.

**75.** (a) Cyclophosphamide

Cyclophosphamide is commonly employed as a second-line agent in frequently relapsing or steroid-dependent nephrotic syndrome. Key adverse effects include bone marrow

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suppression (neutropenia), hemorrhagic cystitis (which can present as hematuria), nausea, and vomiting. Levamisole and cyclosporine have different side-effect profiles, and prednisolone-induced side effects are more along the lines of Cushingoid features, hyperglycemia, etc.

**76.** (d) 1, 2, 3 and 4

Distal (type 1) RTA features a normal-anion-gap (hyperchloremic) metabolic acidosis (1) due to impaired distal acid excretion (2). Chronic acidosis may lead to muscle weakness, bone demineralization (rickets/osteomalacia) (3). Children can present with polyuria/polydipsia from urinary concentrating defects (4). Thus, all listed statements are accurate for distal RTA.

**77.** (b) Posterior urethral valve

In male infants, congenital posterior urethral valves cause obstruction to urine outflow, resulting in a weak or dribbling urinary stream, recurrent UTIs, and bladder distention (which can be palpable). A bladder tumor or neuroblastoma would be far less likely to present with a lifelong history of dribbling since birth. A ureterocele typically arises more internally. Posterior urethral valves remain the classic cause in a male infant with such symptoms.

**78.** (d) Henoch–Schönlein purpura

Henoch–Schönlein purpura (IgA vasculitis) is classically described in children with the tetrad of palpable purpura on buttocks/legs, arthritis (joint pains/swelling), abdominal pain, and renal involvement (hematuria). Thrombasthenia and ITP primarily affect platelets/bleeding but do not typically involve arthritis or abdominal pain in this manner. Lupus is less likely in this acute scenario with the specific triad.

**79.** (c) Make a tower of 6 blocks

By about 1 year of age, typical milestones include waving "bye-bye," saying a few words like "mama/dada," and standing alone briefly. Stacking six blocks usually emerges closer to 2 years of age (toddlers typically can stack about two cubes by 15 months, four cubes by 18 months, and around six cubes near age 2). Therefore, option (c) is beyond a typical 12-month-old's motor skills.

**80.** (a) Enlarged thymus

SCID involves profound defects in both T cells (and often B cells), leading to recurrent severe infections, low immunoglobulins, and marked T-cell dysfunction. Typically, these children have a very small or absent thymus on imaging due to poor T-cell development. An "enlarged thymus" is not characteristic—if anything, the thymus is underdeveloped.

**81.** (a) Chediak Higashi syndrome

Chediak–Higashi syndrome is a rare autosomal recessive disorder characterized by oculocutaneous albinism (partial), recurrent infections, and the presence of giant granules within leukocytes (notably neutrophils). These giant granules are due to a defect in lysosome-related organelles (abnormal microtubule function). Hermansky–Pudlak syndrome also involves albinism and a platelet storage-pool defect, but not the characteristic giant granules or marked immunodeficiency. Piebaldism and Waardenburg's syndrome cause specific pigmentary disturbances without the severe immunological issues seen in Chediak–Higashi.

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**82.** (a) Continue breast feeds and review after 48 hours

At around 2 days of age, a bilirubin level of 11 mg/dL with predominantly unconjugated bilirubin (direct component only 0.4 mg/dL) is within the range of physiologic or breastfeeding jaundice in a healthy term neonate. The infant is clinically well, so immediate phototherapy or exchange transfusion is usually not required unless bilirubin crosses higher risk thresholds. The recommended approach is to maintain adequate feeds—especially breast milk—to promote bilirubin excretion and to recheck levels if clinically indicated after about 1–2 days.

**83.** (a) Vitamin B6 — Beriberi

Beriberi is caused by a deficiency of vitamin B1 (thiamine), not B6 (pyridoxine). Pellagra (B3/niacin deficiency) is correctly matched, subacute combined degeneration of the spinal cord

corresponds to B12 deficiency, and a "burning feet" (or burning sensation) can be associated with pantothenic acid (vitamin B5) deficiency. Thus, the incorrect pairing is "Vitamin B6 — Beriberi."

**84.** (c) A-4 B-1 C-2 D-3

1. Fetal alcohol syndrome → commonly associated with ventricular septal defect (4).
2. Turner's syndrome → classically features bicuspid aortic valve or coarctation (1).
3. Down syndrome → well known for endocardial cushion defects (AV septal defects) (2).
4. Congenital rubella → classically linked with pulmonary artery stenosis (among other abnormalities) (3).

So the matches are A→4, B→1, C→2, and D→3.

**85.** (d) Marasmus

Marasmus is characterized by severe wasting of both muscle and subcutaneous fat, with little or no edema. A 12-month-old weighing only 4.5 kg is extremely underweight for age, indicating a profound caloric (energy) deficiency. Kwashiorkor typically presents with edema and relatively better subcutaneous fat preservation, whereas marasmic-kwashiorkor shows features of both. The severe deficiency with marked wasting but no edema is classic marasmus.

**86.** (d) Marfan's syndrome — 47, XYY

Marfan's syndrome is not typically associated with an abnormal chromosome number. It is caused by a fibrillin-1 (FBN1) gene mutation (on chromosome 15) but remains 46, XY or 46, XX karyotypically. Meanwhile, Turner's syndrome (45, X), Down syndrome (47, +21), and Klinefelter's (47, XXY) are correctly matched to their known karyotypes. "47, XYY" is a separate condition (sometimes called XYY syndrome), not Marfan's.

**87.** (c) Partial thromboplastin time

Hemophilia A (factor VIII deficiency) and Hemophilia B (factor IX deficiency) both involve the intrinsic coagulation pathway. The activated partial thromboplastin time (aPTT) is prolonged in defects of the intrinsic and common pathways, making it the best laboratory screening test for hemophilia. The prothrombin time (PT) primarily checks the extrinsic pathway. Clotting time is an older, less-precise measure, and clot retraction is more related to platelet function.

**88.** (b) Sensory loss

Poliomyelitis is an acute viral infection that predominantly affects the anterior horn cells of the spinal cord, leading to lower motor neuron involvement. Clinical features may include flaccid paralysis (hypotonia), depressed or absent reflexes, and muscle pain. Because the lesion spares sensory pathways, sensory deficits are not typical in acute polio. Therefore, "sensory loss" is the incorrect option among the listed choices.

**89.** (c) Anti double stranded DNA antibodies

Anti–double-stranded DNA (anti-dsDNA) antibodies have high specificity for systemic lupus erythematosus, correlated with disease activity (especially nephritis). Anti-histone antibodies are more associated with drug-induced lupus. ANCA (anti–neutrophil cytoplasmic antibodies) typically indicate vasculitides (e.g., Wegener's/granulomatosis with polyangiitis). Anti-myeloperoxidase is another ANCA subtype, also not specific for typical childhood lupus.

**90.** (b) A-2 B-3 C-4 D-1

- Hepatitis B vaccine (A) is a subunit vaccine (2) containing HBsAg.

1. Diphtheria vaccine (B) is a toxoid (3).
2. Haemophilus influenzae type b vaccine (C) uses a polysaccharide (capsular) conjugated to a protein (4 in simplified matching schemes).
3. Measles vaccine (D) is a live attenuated viral vaccine (1).

Hence the matching is A→2, B→3, C→4, D→1.

**91.** (b) 2 and 3

Key anthropogenic greenhouse gases include carbon dioxide (2) and chlorofluorocarbons (CFCs) (3), as well as methane and nitrous

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oxide. While sulphur dioxide ($SO_2$) contributes to acid rain and other pollution problems, it is not a major greenhouse gas. Nitrogen ($N_2$) is the most abundant atmospheric gas but largely inert in terms of heat trapping. Hence (b) "2 and 3" are chiefly implicated in greenhouse warming.

**92.** (a) 1 only

Compact fluorescent lamps (CFLs) contain small amounts of mercury vapor, which can pollute the environment if improperly discarded. Standard incandescent bulbs and LED lamps generally do not contain mercury. LED bulbs may have other metals (like lead, nickel) but not mercury in typical designs. Thus, CFLs (1) alone are responsible for mercury pollution risk.

**93.** (c) 1, 3 and 4 only

Common nonnutritive sweeteners include acesulfame potassium (acesulfame K) (1), saccharin (3), and sucralose (4). These are widely used in "diet" or "sugar-free" products. Polyethylene glycol (2), however, is not a sweetener; it is commonly used as a laxative or a solvent in medications. Thus, 1, 3, and 4 are the actual sugar substitutes.

**94.** (c) an allotrope of Oxygen

Ozone ($O_3$) and diatomic oxygen ($O_2$) are different allotropic forms of the same element (oxygen). An isotope concerns nuclei with differing numbers of neutrons, which is not the case here. An isomer refers to the same chemical formula arranged differently within a compound, and a "hydrate of oxygen" does not apply. Hence, ozone is best described as an allotrope of oxygen.

**95.** (c) Both 1 and 2

India's summer monsoon is driven partly by intense heating of the northwestern Indian subcontinent, which creates a low-pressure area that pulls in moist winds from the Indian Ocean. At the same time, a steep pressure gradient sets up between the cooler ocean surface and the hot landmass, further encouraging strong onshore wind flow. Both factors—land heating (1) and the pressure gradient (2)—are crucial for monsoon onset ("burst").

**96.** (c) Finance Commission

Under the Indian Constitution, the Finance Commission (constituted every five years or so) recommends the distribution of tax revenues between the Union and the States, including principles governing grants-in-aid to States from the Consolidated Fund of India. Neither the Inter-State Council, the Ministry of Finance, nor the (now-replaced) Planning Commission is specifically tasked with laying down these criteria; it is the Finance Commission's explicit mandate.

**97.** (b) Right to Education

The Right to Education was incorporated as a Fundamental Right by the Constitution (Article 21A). It is also recognized internationally as a basic Human Right (e.g., Universal Declaration of Human Rights, Convention on the Rights of the Child). "Right to Information" is a statutory right in India, "Right to Work" is a Directive Principle (not a fundamental right), and "Right to Housing" is not explicitly guaranteed as a fundamental right under the Indian Constitution.

**98.** (c) Ethylene dichloride

Benzoic acid (a), citric acid (b), and sodium chloride (d) are all well-known preservatives or food-processing aids. Benzoic acid helps inhibit microbial growth, citric acid adjusts acidity and has preserving qualities, and salt (sodium chloride) has been used for centuries to preserve foods. Ethylene dichloride is primarily an industrial chemical intermediate (e.g., in PVC production) rather than a food preservative.

**99.** (c) Indravati National Park

Bastar region lies in southern Chhattisgarh. Indravati National Park, known for its rich biodiversity and rare wild buffaloes, is situated in the Bijapur district of Bastar division, Chhattisgarh. Bandhavgarh (in Madhya Pradesh), Kanha (also Madhya Pradesh), and Seshachalam (Andhra Pradesh) are located elsewhere. Thus, among the listed options,

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Indravati National Park is the one specifically found in Bastar region.

**100.** (c) Both 1 and 2

Water hyacinth, though invasive, has been studied for its potential in phytoremediation—absorbing heavy metals (like Cd, Pb, Hg) from contaminated water. Additionally, its biomass can yield various chemical compounds that have been explored for medicinal or pesticidal uses. While most farmers consider it a nuisance, these properties underscore how water hyacinth can be valuable if properly managed and harvested.

**101.** (d) 1, 2 and 3

Calcium carbide, when misused for ripening, can generate acetylene gas (akin to ethylene) but also releases harmful residues (like arsenic or phosphorus compounds) in impure forms. Contact or inhalation can lead to mucosal irritation in the mouth, throat, nose (3), eye damage (1), and, in severe exposures, could contribute to respiratory complications such as pulmonary edema (2). Because of these significant health hazards, calcium carbide's use for ripening is banned in many countries.

**102.** (b) It is used to make green vegetables shiny.

Malachite green is an industrial dye sometimes illegally applied to green vegetables, making them look brighter and more appealing. However, it can be toxic if ingested. It is not commonly used for ripening fruits (that is calcium carbide or ethephon), nor is it routinely added to sugar or tea for weight or flavor. The major concern is its use as a colorant adulterant in produce.

**103.** (d) 1, 2 and 3

In cases of confirmed brain death (while circulation and respiration are still artificially maintained), multiple vital organs can be retrieved and transplanted to recipients. Heart, kidney, and liver are among the commonly transplanted organs from such donors, along with lungs and pancreas in some cases. This practice can save multiple lives from one donor.

**104.** (a) 1, 2 and 3

Biodiversity faces multiple threats worldwide. Global climate change (1) disrupts habitats and species ranges. Pests and pathogens (2) can devastate native species. Invasive species (3) compete aggressively with native organisms, often displacing them. Hence, all three factors collectively pose substantial risks to ecosystems and biodiversity.

**105.** (c) 1, 2 and 3

Biomass power plants can generate energy from various organic materials, such as cow dung, rice husk, and crop residues like wheat stalks (among others). These organic wastes are combusted or converted (e.g., anaerobic digestion) to produce energy. Hence, all the listed items—dung, husk, and stalks—can serve as viable biomass feedstocks.

**106.** (a) To give the drinks a tangy taste.

Phosphoric acid (a phosphate-based compound) is commonly used in cola-type soft drinks to impart a tangy, sharp flavor and to help preserve the beverage's acidity. While phosphate can provide some mineral content, the main reason for its addition is flavor (and sometimes shelf stability), not to add sparkle or color. Thus, giving a tangy taste is the principal purpose of phosphates in many soft drinks.

**107.** (d) 1, 2 and 3

India's E-waste (Management & Handling) Rules govern the responsibilities of all stakeholders in the electronic product lifecycle—producers, collection centers (or dismantlers/recyclers), and consumers as well. It mandates procedures for proper disposal, recycling, or reuse to minimize environmental harm. Hence, the rules apply to (1), (2), and (3).

**108.** (b) Artificial blood vessels

Biodegradable polymers (e.g., polylactic acid or polyglycolic acid) can be engineered into temporary scaffolds that gradually degrade while new tissue grows—particularly suitable for vascular grafts (artificial blood vessels). Artificial lenses for the eye are typically silicone

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(b) Methotrexate
(c) Pyrimethamine
(d) Amoxycillin-Clavulinic acid (amoxyclav)

**23.** Disseminated intravascular coagulation (DIC) is characterized by the following except
(a) widespread bleeding/thrombosis
(b) prolongation of prothrombin time/partial thromboplastin time
(c) high levels of fibrin degradation products
(d) high platelet count

**24.** Match List I with List II and select the correct answer using the code given below the Lists:

| | **List I (Disease)** | | **List II (Appropriate Microbe)** |
|---|---|---|---|
| A | Epidemic typhus | 1 | Coxiella burnetii |
| B | Murine typhus | 2 | R. rickettsii |
| C | Q fever | 3 | R. typhi |
| D | Rocky mountain spotted fever | 4 | R. prowazekii |

Code :
(a) A-1 B-4 C-2 D-3
(b) A-2 B-3 C-4 D-1
(c) A-4 B-3 C-1 D-2
(d) A-3 B-1 C-2 D-4

**25.** Which one of the following statements is not correct regarding the characteristics of HACEK organisms?
(a) Fastidious, fast-growing, gram-positive bacteria whose growth requires an atmosphere of L-cysteine
(b) Known to cause severe systemic infections – most often bacterial endocarditis, which can develop on either native or prosthetic valves
(c) Normally reside in the oral cavity and has been associated with local infections in the mouth
(d) The cure rates for HACEK prosthetic-valve endocarditis appears to be high

**26.** A 50-year old male quartz quarry worker presents with progressive dyspnoea on exertion. Which of the following is the likely pneumoconiosis?
(a) Asbestosis
(b) Byssinosis
(c) Silicosis
(d) Berylliosis

**27.** Splenectomised patients have an increased susceptibility to which one of the following infections?
(a) Entamoeba histolytica
(b) Giardia lamblia
(c) Streptococcus pneumoniae
(d) Aspergillus niger

**28.** Match List I with List II and select the correct answer using the code given below the Lists:

| | **List I (Class of drugs)** | | **List II (Anti retroviral agents)** |
|---|---|---|---|
| A | Nucleoside analogue Reverse Transcriptase Inhibitor | 1 | Stavudin |
| B | Nucleotide analogue Reverse Transcriptase Inhibitor | 2 | Nevirapine |
| C | Non-Nucleoside Reverse Transcriptase Inhibitor | 3 | Lopinavir |
| D | Protease Inhibitor | 4 | Tenofovir |

Code :
(a) A-1 B-3C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-3 C-1 D-2
(d) A-3 B-1 C-2 D-4

**29.** Which one of the following is not characteristic of Vitamin-D resistant rickets?
(a) X-linked inheritance
(b) Renal stones
(c) Reduced calcium absorption from the gut
(d) Hypophosphatemia

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products, not as a sugar-refining decolorant. Thus, among the two listed, only the first (dimethylamine epichlorohydrin copolymer) functions as a decoloring agent.

**117.** (d) 1, 2 and 3

Groundnut, Sesamum (til), and Pearl millet (bajra) are all commonly grown in rainfed (unirrigated) conditions across many parts of India. They generally require moderate rainfall and are part of traditional Kharif cropping in semi-arid to sub-humid regions. Because all three can thrive with limited water inputs, they qualify as predominantly rainfed crops.

**118.** (a) Eastern Ghats

Araku Valley is a scenic hill station in the Visakhapatnam district of Andhra Pradesh, lying within the Eastern Ghats range. It is known for coffee plantations, tribal culture, and lush forested landscapes. The Western Ghats run along India's west coast, whereas northeast India's hills and central India's plateau are geographically distinct from Araku's location.

**119.** (b) Tropical rain forest

Tropical rain forests are known for their extraordinary species richness and layered canopies, making them the planet's most biodiverse terrestrial ecosystems. In India, pockets of tropical rain forests exist in regions like the Western Ghats and parts of the Northeast, harboring a vast array of flora and fauna. Moist and dry deciduous forests, as well as scrub forests, feature fewer species overall compared to lush tropical rain forests.

**120.** (a) The anomalous widespread warming of the sea surface of tropical east and central Pacific Ocean

El Niño refers to the periodic warming of ocean surface temperatures in the central-eastern tropical Pacific, disrupting normal weather patterns worldwide. It can weaken monsoons in South Asia, bring heavier rain to some parts of the Americas, and influence global climate extremes. It is unrelated to revolving Caribbean storms (hurricanes), the Coriolis-driven deflection of currents (c), or tornados (d).

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END

**57.** The following are important diagnostic skin manifestations of acute rheumatic fever :
1. Erythema marginatum
2. Subcutaneous nodules
3. Oster's nodes
4. Butterfly rash

Select the correct answer using the code given below:
(a) 1, 2 and 4
(b) 1 and 2 only
(c) 2, 3 and 4
(d) 1 and 3

**58.** Aortic regurgitation is characterized by
1. Wide pulse pressure
2. Angina pectoris
3. Early diastolic murmur
4. Loud 1st heart sound

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 2 and 4
(d) 1, 3 and 4

**59.** Match List I with List II and select the correct answer using the code given below the Lists:

| | **List I (Disease)** | | **List II (Association)** |
|---|---|---|---|
| A | Dermatomyositis | 1 | Heliotrope rash |
| B | Epidemic dropsy | 2 | Hypernatraemia |
| C | Arsenic poisoning | 3 | Hyperpigmentation |
| D | Diabetes insipidus | 4 | Dihydrosanguirine |

Code :
(a) A-1 B-4 C-3 D-2
(b) A-1 B-3 C-4 D-2
(c) A-2 B-4 C-3 D-1
(d) A-2 B-3 C-4 D-1

**60.** Each of the following antibiotics can be given orally except
(a) Azithromycin
(b) Amikacin
(c) Cefdinir
(d) Linezolid

**61.** Consider the following statements regarding Austin Flint murmur :
1. It is heard in severe aortic regurgitation
2. It is produced at the anterior mitral leaflet by the regurgitant blood during diastole
3. It is an evidence of associated mitral stenosis
4. It is heard in aneurysmal dilatation of the ascending aorta

Which of the statements given above are correct ?
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1 and 2 only

**62.** Two or more oligoclonal bands in cerebrospinal fluid are most often positive in
(a) acute bacterial meningitis
(b) multiple sclerosis
(c) subarachnoid haemorrhage
(d) polyneuropathy

**63.** A 30-year old male presented with fever, dry cough and weight loss of 6 months duration. The chest X-ray shows miliary pattern. The differential diagnosis includes all the following except
(a) tuberculosis
(b) Wegener's granulomatosis
(c) fungal infection
(d) sarcoidosis

**64.** Consider the following statements regarding a healthy adult :
1. Mean left atrial pressure is 12-20 mm Hg
2. Left ventricular end diastolic volume is between 70-100 ml/$m^2$
3. Pulmonary vascular resistance is 20-120 dynes sec $cm^{-5}$
4. Left ventricular ejection fraction at rest is 0.55 to 0.80

Which of the statements given above are correct ?
(a) 1, 2 and 3
(b) 2, 3 and 4

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11. Drug of choice for the treatment of Taenia solium and Taenia saginata infestation is
(a) Metronidazole
(b) Albendazole
(c) Niclosamide
(d) Diloxanide furoate

12. Very high serum transaminases (ALT/AST 1000 IU/L) are seen in the following conditions except
(a) Viral hepatitis
(b) Ischaemic liver injury
(c) Toxin-induced liver injury
(d) Alcoholic liver disease

13. Necrotizing papillitis is a feature in all of the following conditions except
(a) Sickle cell disease
(b) Tuberculous pyelonephritis
(c) Diabetes mellitus
(d) Analgesic nephropathy

14. The characteristic abnormality found in the urinalysis of a case of acute glomerulonephritis is
1. Granular casts
2. Red cell casts
3. Hyaline casts
4. WBC casts
Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1 and 4
(c) 2 and 3 only
(d) 2 only

15. Most common mutation in Alport's syndrome is in COL4A5 gene, which is transmitted as
(a) autosomal dominant
(b) autosomal recessive
(c) X-linked
(d) variable, autosomal dominant or autosomal recessive

16. Broad casts in urinary sediments is specific for
(a) acute renal failure
(b) rapidly progressive renal failure
(c) chronic renal failure
(d) asymptomatic urinary abnormality

17. Amaurosis fugax refers to transient ischaemic attack involving the region of
(a) retina
(b) internal capsule
(c) brain stem
(d) cerebral cortex

18. Sub-acute combined degeneration of spinal cord results from the deficiency of which of the following vitamins?
(a) $B_6$
(b) $B_{12}$
(c) $B_1$
(d) $B_3$

19. The following systemic diseases are typically associated with polyneuropathy except
(a) Diabetes mellitus
(b) Hyperthyroidism
(c) Uraemia
(d) Carcinoma bladder

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20. A young boy with history of left ear discharge develops fever, headache, vomiting and focal seizure of right upper limb. The appropriate line of management is
(a) urgent CT head and antibiotics
(b) urgent EEG and antibiotics
(c) urgent Otoscopy and antibiotics
(d) urgent CBC (complete blood counts) and antibiotics

21. Which of the following blood disorders is not associated with a large spleen?
(a) Beta thalassaemia
(b) Chronic myeloid leukaemia
(c) Hairy cell leukaemia
(d) Sickle cell anaemia

22. Megaloblastic anaemia may be caused by the following drugs except
(a) Phenytoin

**37.** Which one of the following is not a feature of Type-I renal tubular acidosis ?
(a) Lower tubule re-absorption of calcium
(b) Defective bicarbonate absorption in distal tubule
(c) Low serum potassium level
(d) Increased anion gap

**38.** Which one of the following is not a feature of Adult Polycystic Kidney Disease ?
(a) Hypertension
(b) Intermittent renal colic
(c) Massive proteinuria
(d) Macroscopic haematuria

**39.** Pin point pupil may be found in all of the following except
(a) Organophosphorus poisoning
(b) Morphine poisoning
(c) Pontine haemorrhage
(d) Paracetamol poisoning

**40.** Pulmonary complications of rheumatoid arthritis include the following except
(a) Pulmonary nodules
(b) Mesothelioma
(c) Fibrosing alveolitis
(d) Pleural effusion

**41.** In a right-handed person, which of the following signs is not a characteristic feature of occlusion in the right middle cerebral artery ?
(a) Left hemiplegia with left UMN VII cranial nerve palsy
(b) Left hemiplegia with aphasia
(c) Left hemiplegia with right anosognosia
(d) Left hemiplegia with left hemi-anaesthesia

**42.** Metoclopramide suppresses which of the following neurotransmitters in vomiting ?
(a) Dopamine
(b) Serotonin 5-HT4
(c) Histamine
(d) Acetylcholine

**43.** The amyloid protein in primary systemic amyloidosis belongs to which of the following classes of fibril proteins ?
(a) AA protein
(b) AL protein
(c) Aβ protein precursor
(d) β2 microglobulin protein

**44.** Match List I with List II and select the correct answer using the code given below the Lists :

| | **List I (Globin chains)** | | **List II (Types of haemoglobin)** |
|---|---|---|---|
| A | $\alpha_2 \beta_2$ | 1 | Hb $A_2$ |
| B | $\alpha_2 \gamma_2$ | 2 | Hb A |
| C | $\alpha_2 \delta_2$ | 3 | Hb F |
| D | $\beta_2 \beta_2$ | 4 | Hb H |

Code :
(a) A-3 B-1 C-2 D-1
(b) A-4 B-1 C-2 D-3
(c) A-2 B-1 C-3 D-4
(d) A-2 B-3 C-1 D-4

**45.** Which one of the following is not a common feature of cystic fibrosis ?
(a) Exocrine pancreatic insufficiency
(b) Azoospermia
(c) Distal gastrointestinal obstruction
(d) Polyneuropathy

**46.** A 60-year old male suffering from auditory hallucinations says that people staying upstairs were talking about him and conspiring against him. He filed a police complaint against them but the allegations were proved to be wrong. The most likely diagnosis is
(a) depression
(b) dementia
(c) delusional disorder
(d) schizophrenia

**47.** Each of the following is true about the idiopathic primary pulmonary hypertension except
(a) it is usually associated with coronary artery disease
(b) it is more common in females
(c) it is usually asymptomatic to begin with

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**30.** A 8-year old child presents with itching on the scalp with loss of hair. A characteristic black dot appearance is seen. Which of the following is the most likely cause?
(a) Alopecia areata
(b) Pediculosis capitis
(c) Tinea capitis
(d) Traumatic alopecia

**31.** Consider the following statements regarding leprosy:
1. Lepra reactions are not a feature of tuberculoid leprosy
2. Erythema nodosum leprosum often occurs following institution of chemotherapy
3. Elevated circulating level of tumour necrosis factor (TNF) is detected in patients with ENL
4. Lucio phenomenon occurs in untreated patients with tuberculoid leprosy

Which of the statements given above are correct ?
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 2 and 4
(d) 1, 3 and 4

**32.** Match List I with List II and select the correct answer using the code given below the Lists :

| | **List I (Organism)** | | **List II (Vector)** |
|---|---|---|---|
| A | Borrelia burg-dorferi | 1 | Aedes aegypti |
| B | Dengue | 2 | Culex mosquito |
| C | Japanese en-cephalitis | 3 | Pediculus homonis corporis |
| D | Rickettsia prowazekii | 4 | Ixodes tick |

Code :
(a) A-1 B-3C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-2 D-4

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**33.** As regards schizophrenia, which one of the following statements is not correct?
(a) Occurs in 0.5-0.8 per cent of general population
(b) Increasing parental age enhances the risk in the child
(c) If both parents are affected, the risk in their offsprings is above 90 per cent
(d) The illness may resemble severe and persistent neurosis

**34.** Consider the following statements regarding organo-phosphorus poisoning :
1. There is inhibition of cholinesterase function
2. In chronic exposure, there may be peripheral neuropathy
3. In acute poisoning, there may be muscular weakness
4. In intermediate syndrome, sensory functions may be affected

Which of the statements given above are correct ?
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 2 and 4
(d) 1, 3 and 4

**35.** Which one of the following is a specific antidote for opiate overdose ?
(a) Fomepizole
(b) Flumazenil
(c) Naloxone
(d) Physostigmine

**36.** Which one of the following statements concerning catheter associated urinary tract infection is correct ?
(a) Most catheter associated infections are symptomatic
(b) Routine antimicrobial prophylaxis is indicated
(c) Microscopic bacteria correlates with significant colony count (10^5/ml) in symptomatic cases
(d) Skin organisms such as staphylococcus and streptococcus are the most common aeteological organisms

# QUESTION PAPER 2013

1. Endemic cardiomyopathy in children is linked to the deficiency of
   (a) zinc
   (b) cobalt
   (c) selenium
   (d) chromium

2. Beta-blocker therapy after acute myocardial infarction is contraindicated in which of the following conditions?
   1. Heart failure
   2. Orthostatic hypotension
   3. Peptic ulcer disease
   4. Bronchial asthma

   Select the correct answer using the code given below:
   (a) 1 and 2 only
   (b) 1, 2 and 4
   (c) 1 and 4 only
   (d) 2, 3 and 4

3. The following congenital heart diseases are associated with cyanosis except
   (a) complete transposition of the great arteries
   (b) single ventricle with or without pulmonic stenosis
   (c) hypoplastic left heart
   (d) atrial septal defect with mitral stenosis

4. A 34-year old non-diabetic, normotensive patient presents with acute severe retrosternal pain. The ECG shows ST elevation ($\geq$ 3 mm) in anterior chest leads. Blood for CPK-MB, Tropin-T and AST are normal. A repeat ECG after 24 hours is normal. What is the likely diagnosis?
   (a) Acute pericarditis
   (b) Prinzmetal's angina
   (c) Acute anterior myocardial infarction
   (d) Acute non-myocardial infarction

5. Which one of the following is characteristic of Opening Snap (on cardiac auscultation)?
   (a) Low pitched, early diastolic
   (b) High pitched, early diastolic
   (c) High pitched, late diastolic
   (d) Low pitched, late diastolic

6. Sudden onset of cough followed by increased dyspnea is typical of
   (a) Pneumothorax
   (b) Lobar pneumonia
   (c) Collapse of lung
   (d) Acute pleurisy

7. Multi-drug resistance tuberculosis implies resistance to at least
   (a) any two antitubercular drugs
   (b) Isoniazid and Ethambutol
   (c) Rifampicin and Ethambutol
   (d) Isoniazid and Rifampicin

8. A patient of pulmonary tuberculosis is on antitubercular therapy. He develops drug-induced hepatitis. Which of the following drugs is not responsible?
   (a) Rifampicin
   (b) Ethambutol
   (c) Pyrazinamide
   (d) Isoniazid

9. Which of the following is the best determinant of adequacy of alveolar ventilation?
   (a) Arterial $pO_2$ level
   (b) Arterial $pCO_2$ level
   (c) Minute ventilation
   (d) Presence of cyanosis

10. Which of the following is a DNA virus?
    (a) Hepatitis A virus
    (b) Hepatitis B virus
    (c) Hepatitis C virus
    (d) Hepatitis E virus

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(d) it is characterized by autosomal dominant inheritance

**48.** Which one of the following is not correct about Wilson's disease ?
(a) It is an autosomal recessive disorder
(b) Serum ceruloplasmin is low
(c) There is hepatolenticular degeneration
(d) Serum copper concentration is high

**49.** Which one of the following is not an aetiology of transudative pleural effusion ?
(a) Mesothelioma
(b) Congestive heart failure
(c) Cirrhosis
(d) Nephrotic syndrome

**50.** With reference to secondary tumours of the lung, which one of the following is not correct ?
(a) Diagnosis is made from radiological examination
(b) Endobronchial deposits are common
(c) These are usually multiple and bilateral
(d) Quite often, there are no respiratory symptoms

**51.** A patient is being investigated for chronic diarrhoea. Small intestinal mucosal biopsy shows PAS positive foamy macrophages. The diagnosis is probably
(a) chronic amoebiasis
(b) chronic giardiasis
(c) Whipple's disease
(d) intestinal sarcoidosis

**52.** Consider the following modalities of treatment :
1. Ballon dilatation
2. Heller's operation
3. Local injection of botulinum toxin
Which of the above is/are the treatment modalities for achalasia cardia ?
(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

**53.** Consider susceptibility to the following pulmonary pathogens:
1. M. tuberculosis
2. P. aeruginosa
3. S. aureus
4. Nocardia sp.
Which of the above is/are associated with long-term glucocorticoid therapy?
(a) 3 only
(b) 1 and 4
(c) 2 and 3
(d) 2, 3 and 4

**54.** Match List I with List II and select the correct answer using the code given below the Lists:

| | **List I (Clinical condition)** | | **List II (Clinical manifestation)** |
|---|---|---|---|
| A | Lepra reaction | 1 | Koebner's phenomenon |
| B | Herpes zoster | 2 | Erythema nodosum |
| C | Psoriasis | 3 | Nikolosky's sign |
| D | Pemphigus vulgaris | 4 | Chickenpox virus |

Code :
(a) A-1 B-4 C-3 D-2
(b) A-1 B-4 C-3 D-1
(c) A-3 B-4 C-1 D-2
(d) A-2 B-4 C-1 D-3

**55.** In moderate severity obstructive lung disease, the expected abnormalities include the following except
(a) ↑ Residual capacity
(b) ↓ Vital capacity
(c) ↓ FRC/TLC ratio
(d) $FEV_1/FVC < 70\%$

NODIA

**56.** Rasmussen's aneurysm is a
(a) dilated vessel in a tubercular lung cavity
(b) dilation of the root of aorta in valvular stenosis
(c) dilated aorta in syphilitic affection
(d) dilated renal vessel in hypertensive renal disease

or acrylic (not biodegradable), artificial teeth are usually ceramic/resin composites, and an "artificial intestine" is not commonly made from standard biodegradable polymers. Thus, among these options, artificial blood vessels (b) is the recognized application.

**109.** (d) Nilgiri hills

The Nilgiri hills, located in the tri-junction area of Tamil Nadu, Kerala, and Karnataka, form the notable convergence of India's Eastern and Western Ghats. The Anaimalai hills and Cardamom hills also belong to the Western Ghats but do not represent the meeting point with the Eastern Ghats. The Nallamala hills are part of the Eastern Ghats in Andhra Pradesh, separate from where they intersect the Western Ghats.

**110.** (b) 2 only

The Indian Constitution (73rd Amendment) established a three-tier Panchayati Raj system (Gram Panchayat at village level, Panchayat Samiti at block level, and Zilla Parishad at district level), not a four-tier system. It also mandates reservation of seats for women (at least one-third) in Panchayati Raj institutions. However, Gram Panchayat members do not possess authority to convene a Lok Adalat. That lies with special legal forums designed for quick dispute resolution, not the local panchayat.

**111.** (b) Eastern Himalayas

The Red Panda and the Hoolock Gibbon both inhabit regions of northeastern India, overlapping with the Eastern Himalayas and adjoining forested areas. Red Pandas are found in states like Sikkim and Arunachal Pradesh, while Hoolock Gibbons (India's only ape species) likewise reside in dense forest belts of Northeast India. They are not found in the Western Himalayas, Western Ghats, or Eastern Ghats in their native habitats.

**112.** (d) 1, 2 and 3

Directive Principles of State Policy (1) include provisions (like Article 45) for free and compulsory education. Rural and Urban Local Bodies (2) share responsibilities in maintaining local schools, implementing literacy programs, etc. Centre–State Relations (3) are relevant because education is in the Concurrent List, requiring coordination between central and state governments. Hence, all three constitutional provisions influence education policy in India.

**113.** (c) Breast cancer

Micronuclei—small, extranuclear bodies containing damaged chromosome fragments—have been widely studied as indicators of genetic instability in breast cancer models, among others. Early research identified these micronuclear formations in breast tumor cells, linking them to DNA damage and an increased risk of malignancy progression. Although micronuclei can appear in many tumor types, their initial characterization as a potential biomarker was closely associated with breast cancer studies.

**114.** (c) The Prime Minister of India

By established convention and statute, the Prime Minister of India is the ex officio President of the Council of Scientific and Industrial Research (CSIR). Founded in 1942, CSIR is India's premier research and development organization. Day-to-day operations are overseen by a Director General and the Governing Body, but its formal head remains the serving Prime Minister.

**115.** (c) 1 and 3 only

The Indian Flying Fox is a large bat species widely distributed in the subcontinent. The Snow Leopard lives in the high mountain ranges of the Himalayas in northern India (e.g., Ladakh, Himachal Pradesh). However, Pumas (cougars/mountain lions) are native to the Americas and do not occur naturally in India. Therefore, only animals 1 and 3 are found in India's wild habitats.

**116.** (a) 1 only

Sugar refineries often use polymeric resins, ion-exchange resins, or compounds like dimethylamine epichlorohydrin copolymer to help remove color and impurities. Sodium stearoyl lactylate, in contrast, is commonly used as an emulsifier or dough conditioner in bakery

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(c) 1, 3 and 4
(d) 1, 2 and 4

**65.** In acute hypoxaemic respiratory failure, which of the following statements is correct regarding arterial blood gas analysis ?
(a) $PaO_2$ is decreased and $PaCO_2$ is either normal or low
(b) $PaO_2$ is decreased and $PaCO_2$ is high
(c) Both $PaO_2$ and $PaCO_2$ levels are markedly reduced
(d) $PaO_2$ is normal and $PaCO_2$ is high

**66.** Match List I with List II and select the correct answer using the code given below the Lists :

| | **List I (Clinical condition)** | | **List II (Association)** |
|---|---|---|---|
| A | Hypothyroidism | 1 | Prolonged P-R interval |
| B | Rheumatic carditis | 2 | Pin point pupils |
| C | Subarachnoid haemorrhage | 3 | Subhyaloid haemorrhage |
| D | Morphine poisoning | 4 | Hung-up reflex |

Code :
(a) A-4 B-3 C-2 D-1
(b) A-2 B-4 C-3 D-1
(c) A-1 B-2 C-3 D-4
(d) A-4 B-1 C-3 D-2

**67.** Each of the following is a sign of impaired ventricular function except
(a) raised JVP
(b) narrow pulse pressure
(c) end-inspiratory lung crepitations
(d) tapping apical impulse

**68.** Consider the following statements regarding coarctation of aorta :
1. It may be associated with Turner syndrome
2. It most commonly occurs near the insertion of the ligamentum arteriosum
3. It is twice as common in females than males
4. It may be associated with bicuspid aortic valve

Which of the statements given above are correct?
(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

**69.** Which one of the following ECG findings is most likely to be seen at the time of cardiac arrest?
(a) Ventricular fibrillation
(b) Ventricular tachycardia
(c) Atrial fibrillation
(d) Paroxysmal atrial tachycardia

**70.** The most reliable indicator of recent Hepatitis-B infection in a convalescing patient is
(a) IgM Anti HBc
(b) IgM Anti HBe
(c) HBs Ag
(d) IgG Anti HBs

**71.** A 2-year old child presents with generalized muscle hypotonia and weakness. Distal muscles are affected more than the proximal muscle groups. Facial muscles are spared. Deep tendon reflexes are diminished. Electromyography reveals fibrillation pattern. The most likely site of involvement is
(a) anterior horn cell
(b) peripheral nerve
(c) neuromuscular junction
(d) muscle

**72.** Confirmation of the diagnosis of Hirschsprung disease is by
(a) barium enema
(b) sigmoidoscopy
(c) rectal biopsy
(d) family history

**73.** Subacute sclerosing panencephalitis is associated with which of the following viral infections?
(a) Mumps
(b) Measles
(c) Rubella
(d) Poliomyelitis

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(d) terrace cultivation

**94.** The chemical substance Taxol is said to have curative value for malignant tumours. It is obtained from the
(a) shoots of Taxodium sp.
(b) roots and fruits of Taxodium sp.
(c) bark from stem of Taxus sp.
(d) roots of Taxus sp.

**95.** Greenhouse gases are called as such because they
(a) are used in warming plant growth chambers
(b) help in maintaining atmospheric $O_2$ and $CO_2$ balance
(c) are produced by green photosynthesizing plants and are trapped in the Earth's atmosphere
(d) prevent the escape of heat waves reradiated from the Earth's surface

**96.** Bacillus thuringiensis is used to control
(a) bacterial pathogens
(b) fungal pathogens
(c) insect pests
(d) nematodes

**97.** Which group of algae can provide nitrogenous nutrients to paddy cultivation under natural field conditions ?
(a) Blue-green algae
(b) Brown algae
(c) Green algae
(d) Red algae

**98.** Tissue culture technique can be used for
1. developing virus-free plants
2. multiplication of elite genotypes of useful trees
3. production of secondary metabolites of plants

Select the correct answer using the code given below:
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**99.** Which one of the following is an appropriate description of mangrove plants ?
(a) Large wood-yielding trees of the tropical forests
(b) Plants in marshy areas with breathing roots
(c) Succulent plants that can thrive in arid/desert areas
(d) Vast grassland areas interspersed with deciduous trees and thorny bushes

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**100.** Consider the following :
1. Ethylene dibromide
2. Potassium meta-bisulphate
3. Sodium benzoate

Which of the above is/are used as food preservatives?
(a) 1 and 2 only
(b) 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

**101.** Rayon fibre is made from
(a) cellulose
(b) isoprene
(c) polyethylene
(d) polyvinyl chloride

**102.** Which of the following parts/spectra of solar radiation is/are mostly absorbed by the leaves of green plants?
(a) Infrared
(b) Red and blue
(c) Violet, indigo and orange
(d) Ultraviolet, green and orange

**103.** Other than nitrogen and oxygen, which one of the following is the most abundant gas in the Earth's atmosphere ?
(a) Argon
(b) Carbon dioxide
(c) Hydrogen
(d) Methane

(c) Galactosaemia
(d) Gaucher's disease

**83.** In an infant born to a HIV-infected mother, at what age of child the ELISA test can reliably diagnose HIV infection?
(a) 3 months
(b) 9 months
(c) 12 months
(d) 18 months

**84.** The most likely diagnosis in a 2-day old neonate with indirect hyperbilirubinemia, positive direct Coombs' test and spherocytes on peripheral blood smear is
(a) Cephalhematoma
(b) ABO incompatibility
(c) Hereditary spherocytosis
(d) G-6-P-D deficiency

**85.** The triad of diarrhoea, dementia and dermatitis is characteristically seen in the deficiency of vitamin
(a) Riboflavin
(b) Niacin
(c) Thiamine
(d) Pyridoxine

**86.** Hyperkalaemia can occur in all the following except
(a) Cushing's syndrome
(b) Crush injuries
(c) Renal failure
(d) Intravascular haemolysis

**87.** An asymptomatic 3-year old girl is brought to the emergency department after 2 hours of accidental kerosene ingestion. The appropriate management is
(a) gastric lavage
(b) inducing emesis
(c) chest X-ray and observation
(d) charcoal haemoperfusion

**88.** A 28-year old woman suffering from sickle cell anaemia marries a 31-year old with no abnormality. What are the respective probabilities to have (i) sickle cell disease and (ii) sickle cell trait in their offspring?
(a) 0% and 100%
(b) 25% and 50%
(c) 50% and 25%
(d) 25% and 25%

**89.** What is the naturally occurring form of vitamin D in the human skin ?
(a) Calciferol
(b) 7 hydrocholesterol
(c) 25 hydroxy cholecalciferol
(d) 1, 25 dihydroxy cholecalciferol

**90.** Warthin-Finkeldey giant cells in lymphoid tissue are characteristic of which of the following infections ?
(a) Mumps
(b) Measles
(c) Congenital cytomegalovirus infection
(d) HIV infection

**91.** Some antibiotics act as ionophores, which means that they
(a) interfere directly with bacterial cell wall synthesis
(b) increase cell membrane permeability to specific ions
(c) inhibit both transcription and translation
(d) inhibit electrophoretic separation of ions

**92.** Polymerase Chain Reaction technique is used for
(a) DNA amplification
(b) DNA sequencing
(c) screening gene libraries
(d) synthesis of polymerases

**93.** In the hills, the soil erosion takes place due to rapid flow of rain water. It can be most effectively controlled by
(a) building dykes
(b) channelizing the water
(c) jhum cultivation

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**115.** Consider the following :
1. Coal pits
2. Sewers
3. Volcanic eruptions

Which of the above is/are the source/sources of $H_2S$ in the environment ?
(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

**116.** Which of the following is/are the source/sources of methane, a greenhouse gas ?
1. Cattle
2. Rice fields
3. Wetlands

Select the correct answer using the code given below:
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**117.** As per the Constitutional provisions, if a Panchayat is dissolved, elections are to be held within
(a) 1 month
(b) 3 months
(c) 6 months
(d) 1 year

**118.** The release of which one of the following into ponds and wells helps in controlling the mosquitoes?
(a) Crab
(b) Dogfish
(c) Gambusia fish
(d) Snail

**119.** Consider the following statements :
1. Infant mortality rate takes into account the death of infants within a month after birth.
2. Infant mortality rate is the number of infant deaths in a particular year per 100 live births during that year.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**120.** In India, sovereignty resides in the
(a) Constitution of India
(b) People of India
(c) President of India
(d) Parliament of India

END

NODIA

**104.** Among the following regions of India, which one receives the highest annual average monsoon rainfall from June to September?
(a) Gangetic West Bengal
(b) Eastern Uttar Pradesh
(c) Western Uttar Pradesh
(d) Punjab

**105.** In which one of the following types of forests is teak a dominant tree species ?
(a) Tropical rain forest
(b) Tropical deciduous forest
(c) Tropical thorn and scrub forest
(d) Temperate forest with grasslands

**106.** Consider the following statements :
1. Carbon dioxide is released from the interior of the Earth during volcanic eruption.
2. Carbon dioxide corrodes the metal surfaces.
Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**107.** With reference to the 'Protected Areas' in India, consider the following statements :
1. In a Wildlife Sanctuary, limited biotic interference is permitted.
2. A Biosphere Reserve is declared to conserve a few specific species of flora and fauna.
3. The boundaries of a National Park are defined by legislation.
Which of the statements given above is/are correct ?
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**108.** Which one of the following pollutants causes surface deterioration of leather goods?
(a) Hydrogen sulphide
(b) Nitrogen dioxide
(c) Ozone
(d) Sulphur dioxide

**109.** The Finance Commission derives its authority from the
(a) Constitution of India
(b) Parliament of India
(c) President of India
(d) Supreme Court of India

**110.** Which of the following regions has the lowest atmospheric humidity?
(a) Equatorial
(b) Monsoon
(c) Prairies
(d) Polar

**111.** Cartagena Protocol on Biosafety deals with
(a) establishing or promoting in situ conservation facilities for rare and endangered organisms
(b) maintaining the worldwide network of gene banks for all the known flora and fauna
(c) monitoring and regulating the development of living modified organisms
(d) ensuring safe handling, safe use and safe trans-boundary movement of living modified organisms

**112.** Which one of the following is a secondary pollutant?
(a) Benzene
(b) Nitrogen oxide
(c) Ozone
(d) Sulphur dioxide

**113.** A transition zone or region separating two biomes is known as
(a) ecocline
(b) ecological niche
(c) ecotone
(d) ecotype

**114.** Eutrophication of water bodies is mainly caused by
(a) carbonates and oxides
(b) hydrocarbons and metals
(c) carbonates and sulphates
(d) phosphates and nitrates

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can all damage the renal papillae, causing their necrosis and sloughing.

**14.** (d) 2 only

Red blood cell (RBC) casts in urine are the hallmark of acute glomerulonephritis. They reflect bleeding within glomerular or tubular structures, with RBCs becoming embedded in Tamm-Horsfall protein. While granular or hyaline casts can appear in various renal conditions and are not specific, and WBC casts are more typical of pyelonephritis or interstitial nephritis, RBC casts strongly point to a glomerular inflammatory process. Therefore, "2 only" (Red cell casts) represents the key and characteristic urinary finding in acute glomerulonephritis.

**15.** (c) X-linked

Alport's syndrome is primarily caused by mutations in the genes coding for type IV collagen, most frequently the COL4A5 gene on the X chromosome. As a result, the most common inheritance pattern is X-linked. This leads to hematuric nephritis, progressive renal failure, sensorineural hearing loss, and ocular anomalies. Although there are rarer cases with autosomal inheritance involving COL4A3 or COL4A4, about 80% of classic Alport's syndrome follows an X-linked pattern due to COL4A5 mutation.

**16.** (c) chronic renal failure

Broad casts, also known as "renal failure casts," form in dilated tubules or collecting ducts of kidneys with significantly reduced function, typically in advanced or chronic renal failure. Because the tubules are atrophic and lumen diameter increases, Tamm-Horsfall protein and cellular debris can form these wider casts. They suggest long-standing kidney disease rather than acute injury. By contrast, acute renal failure or rapidly progressive disease has different urinary sediment findings (e.g., muddy brown granular casts in acute tubular necrosis).

**17.** (a) retina

Amaurosis fugax is characterized by sudden, transient monocular vision loss ("a curtain coming down") caused by a temporary reduction of blood flow to the retina—often due to an embolus to the central retinal artery. The symptom usually resolves within minutes, restoring normal vision. It is akin to a transient ischemic attack but localized to the ocular circulation. Detection and management of underlying sources of emboli (often carotid plaque or cardiac thrombi) is crucial to prevent more serious ischemic events, such as stroke.

**18.** (b) $B_{12}$

Subacute combined degeneration involves demyelination in the dorsal columns and lateral corticospinal tracts of the spinal cord, leading to sensory ataxia, proprioceptive deficits, and spastic weakness. Vitamin $B_{12}$ (cobalamin) deficiency is the classic cause, often arising from pernicious anemia or malabsorption. Prolonged deficiency impairs myelin formation, triggering these neurologic manifestations. While other B-vitamin deficiencies can cause neurological problems (e.g., $B_1$ deficiency causes beriberi and Wernicke-Korsakoff), $B_{12}$ deficiency is uniquely tied to subacute combined degeneration.

NODIA

**19.** (d) Carcinoma bladder

Diabetes mellitus, hyperthyroidism, and uremia (due to chronic kidney disease) are all commonly linked to peripheral nerve damage resulting in polyneuropathy. In diabetes, chronic hyperglycemia injures nerve fibers; in hyperthyroidism, metabolic dysfunction can impact peripheral nerves; in uremia, toxins accumulate and damage nerve function. While some malignancies may produce paraneoplastic neuropathies, carcinoma of the bladder is not typically a frequent or well-recognized cause of polyneuropathy compared to the established metabolic conditions in the other choices.

**20.** (a) urgent CT head and antibiotics

When a child with chronic ear discharge (suggesting middle ear or mastoid infection) presents with fever, headache, and new focal neurological signs or seizures, a brain abscess (often a temporal lobe abscess) must be ruled out immediately. An urgent CT scan of the head (or MRI if available) is essential to confirm or exclude an intracranial abscess or other

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# PAPER 2013 ANSWERS

1. (c) selenium

Endemic cardiomyopathy in children, often exemplified by Keshan disease, has been strongly associated with selenium deficiency. Selenium is crucial for the function of certain antioxidant enzymes (such as glutathione peroxidase). When selenium levels are inadequate, oxidative damage can occur more readily in cardiac muscle cells, predisposing to myocardial injury and subsequent cardiomyopathy. Supplementation of selenium in areas where the soil (and thus the diet) is deficient can reduce the incidence of this condition, underscoring its importance in maintaining cardiac health.

2. (b) 1, 2 and 4

While beta-blockers can improve survival after myocardial infarction, they are generally contraindicated or used with extreme caution in certain situations. Acute or decompensated heart failure is risky because negative inotropy can worsen hemodynamics. Orthostatic hypotension may be exacerbated by beta-blockers due to reduced heart-rate response and cardiac output. Bronchial asthma is particularly problematic with nonselective beta-blockers since bronchoconstriction can be triggered via beta-2 receptor blockade. Peptic ulcer disease, however, is not a classic contraindication for beta-blockers.

3. (d) atrial septal defect with mitral stenosis

Congenital heart defects that present with right-to-left shunts or severely impaired systemic oxygenation (e.g., transposition of the great arteries, single ventricle defects, hypoplastic left heart syndrome) lead to early cyanosis. An atrial septal defect (ASD) usually causes a left-to-right shunt, and adding mitral stenosis typically produces pulmonary congestion and possibly right heart enlargement, but not the classic right-to-left mixing required for early cyanosis. Hence, ASD with mitral stenosis is the one in this list that typically does not cause neonatal cyanosis.

4. (b) Prinzmetal's angina

Prinzmetal's (variant) angina is characterized by transient episodes of coronary artery spasm, producing transient ST-segment elevations on ECG. Unlike a true myocardial infarction, cardiac enzymes (CPK-MB, troponins) typically remain normal because permanent myocardial necrosis does not usually occur. ST segments return to baseline once the spasm resolves, often yielding a normal follow-up ECG. Patients tend to present with chest pain at rest, frequently in the early morning hours. This pattern contrasts with infarction, where enzyme elevations and persistent ECG changes are typical.

5. (b) High pitched, early diastolic

An opening snap is a brief, high-pitched sound heard soon after S2 (the second heart sound), classically in mitral stenosis when the stenotic mitral valve "snaps" open at the onset of diastole. The snap is best heard at the left sternal border or apex, and it occurs relatively early in diastole because the left atrial pressure forces the stenotic valve open abruptly. Being high-pitched, it is distinct from low-pitched diastolic sounds such as the third heart sound (S3).

6. (a) Pneumothorax

A spontaneous pneumothorax can begin abruptly with a sharp onset of chest pain followed by sudden cough and difficulty in breathing (dyspnea). When air enters the pleural space, the lung may partially or completely collapse, rapidly impairing gas exchange. This quick change in intrathoracic pressure often manifests as a sudden respiratory distress. By contrast, pneumonia or pleurisy tends to develop more gradually, although they can present acutely. Pneumothorax remains one of the most common causes of an immediate jump in breathing difficulty.

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7. (d) Isoniazid and Rifampicin

Multi-drug resistant tuberculosis (MDR-TB) is formally defined as Mycobacterium tuberculosis that is resistant to at least isoniazid (INH) and rifampicin—two core first-line anti-TB drugs. Resistance to these agents significantly compromises treatment efficacy because alternative regimens are longer, more toxic, and less effective. Additional resistance to other first-line or second-line agents may further complicate treatment, often requiring specialized combination regimens under strict monitoring. Early detection of resistance patterns is essential for controlling the spread of MDR-TB and improving patient outcomes.

8. (b) Ethambutol

Rifampicin, isoniazid, and pyrazinamide are well-known to have hepatotoxic potential, leading to elevations in liver enzymes and, in more severe cases, frank hepatitis. Ethambutol's primary concern is ocular toxicity (especially optic neuritis), not hepatic injury, so it is rarely implicated in liver dysfunction. When a patient on TB therapy develops elevated transaminases or overt hepatitis, clinicians typically suspect INH, RIF, or PZA, and the regimen is adjusted accordingly. Ethambutol can generally be continued if hepatotoxicity is the only issue.

9. (b) Arterial $pCO_2$ level

Alveolar ventilation effectiveness is best gauged by the arterial partial pressure of carbon dioxide ($pCO_2$). $CO_2$ clearance depends largely on ventilation at the alveolar level. If alveolar ventilation decreases, $CO_2$ accumulates in arterial blood (hypercapnia). By contrast, the arterial $pO_2$ can be affected by ventilation-perfusion mismatches and other factors beyond pure ventilation. Minute ventilation, while useful, does not distinguish dead space ventilation from alveolar ventilation. Clinically, an elevated $pCO_2$ signals hypoventilation and the need to improve the patient's respiratory effort or support.

10. (b) Hepatitis B virus

Among the hepatitis viruses, only hepatitis B virus (HBV) has a partially double-stranded DNA genome. In contrast, hepatitis A, C, D, and E viruses are RNA viruses. HBV's replication involves an unusual cycle that uses reverse transcriptase, but the key point is that its genetic material in virions is DNA. This feature has implications for diagnostic tests and for the development of antiviral therapies, which often target HBV's reverse transcription and DNA polymerase steps to reduce viral replication.

11. (c) Niclosamide

Niclosamide is traditionally regarded as the drug of choice for Taenia saginata (beef tapeworm) and Taenia solium (pork tapeworm) infections. It works by inhibiting the parasite's mitochondrial oxidative phosphorylation. Praziquantel is also effective, but many sources highlight Niclosamide's longstanding role specifically for tapeworm infections. Metronidazole is more relevant for protozoa (e.g., Giardia, Entamoeba), while albendazole targets a range of nematodes and can be used for cysticercosis but is not the primary choice for simple taeniasis.

NODIA

12. (d) Alcoholic liver disease

Marked elevation of transaminases—commonly exceeding 1000 IU/L—is frequently encountered in acute viral hepatitis (e.g., hepatitis A, B, or acute flare of chronic hepatitis), ischemic hepatitis (often termed "shock liver" due to hypoperfusion), or severe toxin-induced hepatitis (e.g., acetaminophen overdose). In alcoholic liver disease, AST and ALT elevations are typically more modest (often $< 300$ IU/L), and AST is often higher than ALT (commonly in a 2:1 ratio). Such extremely high levels are not characteristic of pure alcoholic damage.

13. (b) Tuberculous pyelonephritis

Renal papillary necrosis (necrotizing papillitis) is classically associated with "SODA": Sickle cell disease, Obstruction/pyelonephritis (usually bacterial), Diabetes mellitus, and Analgesic nephropathy. Although tuberculosis can cause granulomatous inflammation in the kidney, it less commonly produces the specific phenomenon of necrotizing papillitis compared to severe bacterial pyelonephritis. By contrast, sickle cell disease (due to microinfarcts), diabetic microangiopathy, and chronic analgesic toxicity

**74.** Match List I with List II and select the correct answer using the code given below the Lists:

| | **List I (Disease)** | | **List II (CSF analysis)** |
|---|---|---|---|
| A | Acute pyogenic meningitis | 1 | Normal CSF |
| B | Tubercular meningitis | 2 | Elevated proteins with no cells |
| C | Guillain-Barre syndrome | 3 | Elevated protein and cells (mainly polymorphs) |
| D | Neurocysticer -cosis | 4 | Elevated proteins and cells (mainly lymphocytes) |

Code :
(a) A-1 B-3C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-3 B-4 C-2 D-1

**75.** Pseudotumour cerebri is characterized by all of the following except
(a) increase in intracranial tension
(b) blurred vision and diplopia
(c) focal neurological signs
(d) self-limiting condition

**76.** Vitamin K-dependent clotting factors include all the following except
(a) Factor II
(b) Factor VIII
(c) Factor IX
(d) Factor X

**77.** A mother brings her 2-year old boy with short history of pallor. Examination reveals pallor, petechiae and splenomegaly. Which of the following is the most likely diagnosis?
(a) Thalassaemia
(b) Acute leukaemia
(c) Hodgkin's lymphoma
(d) Idiopathic thrombocytopenic purpura

**78.** Match List I with List II and select the correct answer using the code given below the Lists:

| | **List I (Disease)** | | **List II (Clinical feature)** |
|---|---|---|---|
| A | Acute lympho-blastic leukae-mia | 1 | Recurrent knee joint swelling |
| B | Juvenile rheu-matoid arthritis | 2 | Lymphadenopathy with petechiae |
| C | Thalassaemia | 3 | Swelling of small joints of hands |
| D | Haemophilia | 4 | Hepatosplenomega-ly with severe pallor |

Code :
(a) A-1 B-3C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-2 B-3 C-4 D-1
(d) A-3 B-1 C-2 D-4

**79.** Which of the following cells in peripheral blood smear are necessarily increased in all haemolytic anaemias?
(a) Sickle cells
(b) Target cells
(c) Burr cells
(d) Reticulocyte cells

**80.** Which of the following is not a naturally occurring anticoagulant in the body?
(a) Protein C
(b) Protein S
(c) Antithrombin III
(d) Von Willebrand Factor

**81.** What is the earliest gestational age at which iodine trapping occurs in foetal thyroid?
(a) 4 – 6 weeks
(b) 8 – 10 weeks
(c) 12 – 14 weeks
(d) 16 – 18 weeks

**82.** Which of the following inborn errors of metabolism can give rise to thromboembolic manifestation in a child?
(a) Phenylketonuria
(b) Homocystinuria

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complications. Empiric intravenous antibiotics targeting likely organisms are started right away. Prompt imaging plus antimicrobial therapy is crucial to prevent progression and serious morbidity.

**21.** (d) Sickle cell anaemia

Spleen enlargement (splenomegaly) is typical in conditions featuring high hematopoietic turnover or chronic infiltration. Beta thalassemia major and chronic myeloid leukemia can cause significant splenomegaly. Hairy cell leukemia is well known for massive splenic enlargement. In sickle cell anemia, however, repeated vaso-occlusive episodes in the spleen lead to infarctions over time. This process causes "autosplenectomy," whereby the spleen becomes small and fibrotic. Hence, sickle cell anemia is the condition here not typically associated with a large spleen.

**22.** (d) Amoxicillin-Clavulanic acid (amoxyclav)

Megaloblastic anemia often arises from interference with folate metabolism. Methotrexate (a dihydrofolate reductase inhibitor), phenytoin (which interferes with folate absorption) and pyrimethamine (another antifolate) can all cause megaloblastic changes in erythropoiesis. By contrast, amoxicillin-clavulanate is a β-lactam antibiotic that does not significantly affect folate metabolism or vitamin $B_{12}$ metabolism. Therefore, it is not implicated in megaloblastic anemia, making it the correct "exception" among the listed drugs.

**23.** (d) high platelet count

DIC is a pathologic process of uncontrolled activation of coagulation, leading to consumption of platelets and coagulation factors. This results in microthrombi in small vessels as well as widespread bleeding. Laboratory hallmarks include prolonged PT and aPTT, elevated fibrin degradation products (or D-dimer), and thrombocytopenia (low platelet count). Hence, "high platelet count" is distinctly not characteristic of DIC. Indeed, platelets are typically used up in the ongoing coagulation, so their levels drop rather than rise.

**24.** (c) A-4 B-3 C-1 D-2

1. Epidemic typhus is caused by _Rickettsia prowazekii_ → (4).
2. Murine typhus (endemic typhus) is caused by _Rickettsia typhi_ → (3).
3. Q fever is caused by _Coxiella burnetii_ → (1).
4. Rocky Mountain spotted fever is caused by _Rickettsia rickettsii_ → (2).

Hence the matching sequence is A=4, B=3, C=1, D=2, which corresponds to option (c).

**25.** (a) Fastidious, fast-growing, gram-positive bacteria whose growth requires an atmosphere of L-cysteine

The HACEK group (Haemophilus, Aggregatibacter, Cardiobacterium, Eikenella, Kingella) are gram-negative organisms that are fastidious and often require a carbon dioxide–enriched environment, not specifically L-cysteine. They are a known cause of culture-negative endocarditis affecting both native and prosthetic valves, often originating from oral flora. When appropriately identified and treated, cure rates tend to be good. Therefore, describing them as "gram-positive" or "needing L-cysteine" is incorrect, making option (a) the statement that is not correct.

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**26.** (c) Silicosis

Silicosis results from inhalation of crystalline silica dust, commonly found in occupations such as quarrying, mining, sandblasting, and stone cutting. Progressive dyspnea, cough, and radiographic nodular opacities (particularly in upper lung zones) are characteristic. Asbestosis is associated with shipyards or insulation work, byssinosis is linked to cotton dust exposure, and berylliosis often occurs in aerospace or manufacturing industries dealing with beryllium. A quartz quarry worker is at greatest risk for silicosis, making that the most likely pneumoconiosis.

**27.** (c) Streptococcus pneumoniae

Patients without a functional spleen (asplenic or post-splenectomy) are particularly prone to infections with encapsulated bacteria such as _Streptococcus pneumoniae_, _Haemophilus

if the non-dominant (right) parietal lobe is involved. Aphasia is generally associated with lesions of the dominant hemisphere (usually the left hemisphere in right-handed people). Therefore, "left hemiplegia with aphasia" (b) does not match a right MCA stroke but rather a left hemisphere lesion.

**42.** (a) Dopamine

Metoclopramide primarily acts by antagonizing dopamine (D2) receptors in the chemoreceptor trigger zone, reducing dopaminergic stimulation of the vomiting center. At higher doses it can also block 5-HT3 receptors, but it actually enhances 5-HT4 receptor activity in the gut to promote prokinetic effects. It does not specifically block histamine or acetylcholine as its main antiemetic mechanism. Thus, the principal neurotransmitter it suppresses in preventing nausea/vomiting is dopamine.

**43.** (b) AL protein

Primary (AL) amyloidosis is typically caused by the deposition of immunoglobulin light chains or fragments thereof, produced by plasma cell dyscrasias (often multiple myeloma). The fibrils formed are designated "AL" (Amyloid Light chain). In contrast, "AA" fibrils refer to serum amyloid A (seen in secondary/reactive amyloidosis), "Aβ" refers to beta-amyloid in Alzheimer's disease plaques, and β2-microglobulin amyloid accumulates in long-term hemodialysis. Hence, "AL protein" best matches primary systemic amyloidosis.

**44.** (d) A-2 B-3 C-1 D-4

1. $\alpha_2 \beta_2 \rightarrow$ Adult Hemoglobin A $\rightarrow$ (2)
2. $\alpha_2 \gamma_2 \rightarrow$ Fetal Hemoglobin (Hb F) $\rightarrow$ (3)
3. $\alpha_2 \delta_2 \rightarrow$ Hemoglobin $A_2 \rightarrow$ (1)
4. $\beta_2 \beta_2 \rightarrow$ Hemoglobin H $\rightarrow$ (4)

Hence the correct sequence is A=2, B=3, C=1, D=4, which matches option (d).

**45.** (d) Polyneuropathy

Cystic fibrosis commonly presents with malabsorption due to pancreatic insufficiency, meconium ileus or distal intestinal obstruction, and male infertility often due to azoospermia (absent or obstructed vas deferens). While CF can have multiple organ involvement—lungs, pancreas, reproductive tract—peripheral nerve damage (polyneuropathy) is not characteristically a feature. Thus, option (d) is the one that is not commonly seen in cystic fibrosis.

**46.** (c) delusional disorder

Delusional disorder is characterized by a persistent, well-systematized delusional belief (often persecutory), with relatively preserved functioning and limited or no other psychotic symptoms. The patient's conviction that neighbors conspire against him, despite normal functioning in other areas, fits a persecutory delusion. Schizophrenia usually involves more pervasive disturbance with prominent hallucinations, disorganized behavior/thought, and social/occupational dysfunction. Delusional disorder can include minimal hallucinations connected to the main delusional theme, but they are not typically as global as in schizophrenia.

**47.** (a) it is usually associated with coronary artery disease

Idiopathic primary pulmonary hypertension is a condition of elevated pulmonary artery pressure in the absence of a known secondary cause. It is more common in females, often presents insidiously (asymptomatic or mild symptoms at first), and can have a familial (autosomal dominant) component with variable penetrance. There is no typical strong association with coronary artery disease, so (a) is the statement that is not true.

**48.** (d) Serum copper concentration is high

Wilson's disease is an autosomal recessive disorder of copper metabolism, leading to low ceruloplasmin levels and accumulation of copper in tissues (particularly liver and basal ganglia). While free serum copper is elevated, total serum copper is often low or near-normal, because most circulating copper is normally bound to ceruloplasmin. Hence, it is incorrect to say the overall "serum copper concentration is high." Kayser-Fleischer rings, hepatic dysfunction, and neurologic/psychiatric changes are hallmark features.

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acute cholinergic symptoms including muscle weakness (statement 3). Chronic or repeated exposure can result in organophosphate-induced delayed neuropathy (statement 2). The "intermediate syndrome" mainly features proximal muscle weakness and cranial nerve deficits rather than marked sensory impairment, so statement 4 is not typically correct. Hence, options 1, 2, and 3 accurately describe recognized effects of organophosphorus poisoning, making (a) the correct choice.

**35.** (c) Naloxone

Naloxone is an opioid receptor antagonist that rapidly reverses the life-threatening respiratory depression seen in opioid overdose. It binds with high affinity to μ-opioid receptors without activating them, thereby displacing opioids like morphine or heroin. Fomepizole is used for toxic alcohol ingestion (methanol/ethylene glycol), Flumazenil for benzodiazepine overdose, and Physostigmine for anticholinergic toxicity. Naloxone's prompt action and short half-life make it critical in emergency management of suspected opioid intoxication or overdose.

**36.** (c) Microscopic bacteria correlates with significant colony count (>10^5/ml) in symptomatic cases

Many catheter-associated urinary tract infections actually remain asymptomatic, so (a) is incorrect. Routine prophylaxis (b) is generally not recommended because it can foster antibiotic resistance. The most common pathogens in catheter-associated UTIs are typically enteric bacteria such as E. coli, not staphylococci/streptococci from the skin, making (d) incorrect. In symptomatic cases, finding significant bacteriuria correlates with high colony counts ($\geq 10^5$ CFU/ml), which aligns with (c) and makes it the correct statement.

**37.** (d) Increased anion gap

Type 1 (distal) RTA is characterized by an inability to acidify urine in the distal tubule. Typical lab findings include a normal anion gap (hyperchloremic) metabolic acidosis, and patients often have hypokalemia. Disturbances in distal tubular handling of hydrogen ions can also lead to increased urinary calcium losses (risk of stones). "Increased anion gap" is not a feature of distal RTA (it is a normal anion gap acidosis), hence (d) is not characteristic.

**38.** (c) Massive proteinuria

Adult Polycystic Kidney Disease (APKD) typically presents with flank pain, hypertension, and hematuria (which can be microscopic or gross). Intermittent renal colic can occur due to cyst rupture or nephrolithiasis. Although proteinuria may occur, it is usually mild or moderate, not in the "massive" range (>3.5 g/day) that is characteristic of nephrotic syndromes. Thus, "massive proteinuria" is not a classic feature of APKD, making option (c) the correct exclusion.

**39.** (d) Paracetamol poisoning

Pinpoint (miosis) pupils commonly occur with opioid overdose (e.g., morphine) and organophosphorus poisoning (due to excessive cholinergic stimulation). A pontine hemorrhage can also cause bilaterally constricted pupils by affecting sympathetic pathways. By contrast, paracetamol (acetaminophen) overdose usually does not produce significant miosis; it primarily causes hepatotoxicity at high doses. Thus, among the listed options, paracetamol toxicity does not classically present with pinpoint pupils.

**40.** (b) Mesothelioma

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Rheumatoid arthritis (RA) can have various thoracic manifestations, such as rheumatoid nodules within the lung parenchyma, pleural effusions, and fibrosing alveolitis (interstitial lung disease). While RA is linked to an increased risk of pleural disease and certain interstitial processes, there is no well-established association between rheumatoid arthritis and mesothelioma. Mesothelioma is typically linked to asbestos exposure, making (b) the exception in the context of RA complications.

**41.** (b) Left hemiplegia with aphasia

Occlusion of the right MCA in a right-handed individual typically causes left-sided motor and sensory deficits (left hemiplegia, left hemisensory loss), possible left homonymous hemianopia, and often left-sided neglect or anosognosia

A Rasmussen's aneurysm is an aneurysmal dilation of a branch of the pulmonary artery that lies within or in close relation to a tubercular cavity. Chronic inflammation and weakening of the vessel wall can result in this localized dilation. It can be a source of life-threatening hemoptysis. The other listed options refer to different vascular dilations not linked specifically to TB lung cavities.

**57.** (b) 1 and 2 only

Major Jones criteria for acute rheumatic fever include several clinical features, two of which are specific skin findings: Erythema marginatum (1) and Subcutaneous nodules (2). "Oster's (Osler's) nodes" belong to infective endocarditis rather than rheumatic fever, and "butterfly rash" is associated with systemic lupus erythematosus. Hence, among the listed choices, only 1 and 2 are recognized dermatologic signs in acute rheumatic fever.

**58.** (a) 1, 2 and 3

In aortic regurgitation, regurgitant flow into the left ventricle during diastole leads to a wide pulse pressure (1) and an early diastolic murmur (3). Patients can experience angina pectoris (2), especially if the regurgitation is significant and compromises coronary perfusion. The first heart sound (S1) is usually normal or even soft; a distinctively loud S1 is more typical of mitral stenosis. Hence 1, 2, and 3 describe AR, whereas (4) does not.

**59.** (a) A-1 B-4 C-3 D-2

1. Dermatomyositis → Heliotrope (violaceous) rash on eyelids → (1)
2. Epidemic dropsy (from adulterated mustard oil) → toxic substance includes dihydrosanguinarine → (4)
3. Arsenic poisoning → classically produces skin hyperpigmentation and keratoses → (3)
4. Diabetes insipidus → inability to concentrate urine leads to free-water loss and hypernatremia → (2)

Hence A=1, B=4, C=3, D=2.

**60.** (b) Amikacin

Amikacin is an aminoglycoside antibiotic that has very poor oral absorption and is virtually always administered parenterally (intravenous or intramuscular). By contrast, azithromycin, cefdinir, and linezolid are all well-established oral formulations for outpatient use. Thus, amikacin is the only one in the list not conventionally given by the oral route.

**61.** (d) 1 and 2 only

The Austin Flint murmur is a low-pitched mid-diastolic murmur best heard at the apex in cases of significant aortic regurgitation (1). It arises when the regurgitant jet from the aorta strikes the anterior leaflet of the mitral valve (2), causing functional "mitral rumbling." It does not indicate actual mitral stenosis (3 is false), nor is it specifically tied to aneurysmal dilation of the aorta (4 is false).

**62.** (b) multiple sclerosis

Oligoclonal bands on CSF electrophoresis are a classic immunological marker in multiple sclerosis, reflecting intrathecal immunoglobulin production. While they can occasionally appear in other inflammatory conditions of the central nervous system, their presence in the right clinical context strongly supports a diagnosis of MS. Acute bacterial meningitis, subarachnoid hemorrhage, and isolated peripheral neuropathies generally do not feature the same oligoclonal band pattern in the CSF.

**63.** (b) Wegener's granulomatosis

A "miliary" pattern on chest imaging is characterized by numerous tiny nodules throughout both lungs, classically seen in disseminated (miliary) tuberculosis and certain fungal infections (e.g., histoplasmosis). Sarcoidosis can sometimes produce diffuse micronodular or reticulonodular patterns. By contrast, Wegener's granulomatosis (now termed Granulomatosis with polyangiitis) typically presents with cavitary nodules, sinus involvement, and glomerulonephritis. It is not a typical cause of a diffuse miliary pattern, making it the "except" answer.

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**49.** (a) Mesothelioma

Transudative effusions form when systemic factors alter fluid dynamics (e.g., increased hydrostatic pressure or decreased oncotic pressure), classically seen in congestive heart failure, cirrhosis, and nephrotic syndrome. Mesothelioma, a malignant pleural tumor often linked to asbestos exposure, typically produces exudative pleural effusions due to local pleural involvement and inflammation. Thus, (a) is not a cause of transudative effusion, making it the correct exception.

**50.** (b) Endobronchial deposits are common

Secondary (metastatic) lung tumors often present as multiple nodular deposits on chest imaging and can be bilateral. Many patients are asymptomatic or minimally symptomatic, and the diagnosis is typically made via radiologic findings (chest X-ray or CT scan). Although endobronchial metastases can occur, they are relatively rare compared to parenchymal deposits, so it is not correct to call them "common." Hence, option (b) is the incorrect statement.

**51.** (c) Whipple's disease

Whipple's disease, caused by Tropheryma whipplei, is characterized by malabsorption, chronic diarrhea, weight loss, and systemic symptoms. On small intestinal biopsy, periodic acid–Schiff (PAS)-positive macrophages packed with non-acid-fast bacilli are a hallmark. Amoebiasis and giardiasis show different histological features (trophozoites). Sarcoidosis can involve the GI tract but is more classically associated with non-caseating granulomas rather than PAS-positive foamy macrophages.

**52.** (d) 1, 2 and 3

Achalasia cardia is characterized by failure of the lower esophageal sphincter to relax properly. Standard treatments include pneumatic (balloon) dilatation to disrupt LES fibers, Heller's myotomy (surgical incision of LES muscle) often combined with partial fundoplication to prevent reflux, and endoscopic injection of botulinum toxin, which transiently paralyzes the LES muscle, facilitating esophageal emptying. Thus, all three listed (1, 2, and 3) are recognized treatment options.

**53.** (b) 1 and 4

Long-term steroid (glucocorticoid) use predisposes to reactivation of latent tuberculosis and opportunistic infections such as nocardiosis. _Mycobacterium tuberculosis_ (1) may flare due to impaired cell-mediated immunity, and _Nocardia_ species (4) are classic opportunists in immunosuppressed individuals. While _ Pseudomonas aeruginosa_ and _Staphylococcus aureus_ can be problematic in certain settings (hospitalized, severe structural lung disease, etc.), they are not as closely linked to chronic steroid use as TB and Nocardia are.

**54.** (d) A-2 B-4 C-1 D-3

1. Lepra reaction → often presents with Erythema Nodosum Leprosum (ENL) → (2)
2. Herpes zoster → reactivation of the Varicella (chickenpox) virus → (4)
3. Psoriasis → known for Koebner's phenomenon (lesions appearing at sites of skin trauma) → (1)
4. Pemphigus vulgaris → Nikolsky's sign (skin/mucosa shears off with pressure) → (3)

Thus A=2, B=4, C=1, D=3.

**55.** (c) ↓ FRC/TLC ratio

Obstructive lung diseases (e.g., COPD, asthma) typically show increased air trapping, leading to elevated residual volume (RV) and often increased total lung capacity (TLC). The functional residual capacity (FRC) also tends to rise. Because both FRC and TLC often increase, the FRC/TLC ratio usually stays normal or may be increased, not decreased. A reduced $FEV_1$/FVC (<70%) is the hallmark, and vital capacity can decrease due to the large residual volume. Hence, "↓ FRC/TLC ratio" is the incorrect (i.e., "except") statement.

**56.** (a) dilated vessel in a tubercular lung cavity

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influenzae_ type b, and _Neisseria meningitidis_. The spleen is vital in opsonizing and clearing these organisms. Protozoan infections like _Entamoeba_ or _Giardia_, or fungi like _ Aspergillus_, are not the most notable threats in splenectomised patients compared with the heightened risk of fulminant bacterial sepsis from _S. pneumoniae_.

**28.** (b) A-1 B-4 C-2 D-3

1. Nucleoside RT inhibitor (NRTI) example: stavudine (d4T) → A = 1
2. Nucleotide RT inhibitor example: tenofovir → B = 4
3. Non-nucleoside RT inhibitor example: nevirapine → C = 2
4. Protease inhibitor example: lopinavir → D = 3

Hence the matching is A=1, B=4, C=2, D=3, corresponding to option (b).

**29.** (b) Renal stones

Vitamin-D resistant rickets (often X-linked hypophosphatemic rickets) features a genetic defect causing renal phosphate wasting and persistent hypophosphatemia. Patients often present with rickets-like bone changes unresponsive to typical doses of vitamin D. Because the defect primarily involves phosphate handling rather than calcium metabolism, they do not typically develop hypercalcemia or significant hypercalciuria that would predispose to renal stones. X-linked inheritance, hypophosphatemia, and normal (or only slightly affected) calcium absorption are all characteristic; renal calculi are not.

**30.** (c) Tinea capitis

Tinea capitis (scalp ringworm) is a fungal infection commonly caused by dermatophytes such as _Trichophyton_ and _Microsporum_. The "black dot" appearance occurs when brittle, infected hairs break off at the scalp surface, leaving small black stubs. The condition often presents with pruritus (itching), scaling, and patchy hair loss. Alopecia areata involves non-scaly patches, pediculosis capitis (head lice) produces visible lice/nits, and traumatic alopecia typically has an obvious mechanical cause rather than the classic "black dot" pattern.

**31.** (a) 1, 2 and 3

In the usual terminology, "lepra reaction" often refers to Type 2 reaction (erythema nodosum leprosum, ENL), which is not seen in purely tuberculoid disease, so statement 1 can be considered correct in that context. ENL (statement 2) frequently appears after starting multidrug therapy and involves immune complex–mediated inflammation. Elevated TNF-α (statement 3) is indeed found in ENL, contributing to its inflammatory severity. Lucio phenomenon, however, is linked specifically to diffuse lepromatous leprosy (not tuberculoid), so statement 4 is incorrect.

**32.** (c) A-4 B-1 C-2 D-3

1. Borrelia burgdorferi_ (Lyme disease) is transmitted by the Ixodes tick → 4.
2. Dengue virus is transmitted by Aedes aegypti → 1.
3. Japanese encephalitis virus is transmitted by Culex mosquitoes → 2.
4. Rickettsia prowazekii_ (epidemic typhus) is transmitted by the human body louse, _Pediculus humanus corporis_ → 3.

Hence A=4, B=1, C=2, D=3 matches option (c).

**33.** (c) If both parents are affected, the risk in their offsprings is above 90 per cent

The overall lifetime risk of schizophrenia in the general population is around 0.5–1%. Advanced paternal age does appear to modestly increase the risk in offspring. When both parents are schizophrenic, the child's risk may rise substantially compared to the general population (up to around 40–50%), but not as high as 90%. Clinically, schizophrenia can manifest with bizarre or severe psychotic symptoms that sometimes superficially resemble a chronic neurosis, but true neurosis differs both diagnostically and in underlying pathology.

**34.** (a) 1, 2 and 3

Organophosphorus compounds irreversibly inhibit cholinesterase (statement 1), causing

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**64.** (b) 2, 3 and 4

Normal mean left atrial pressure is typically closer to 6-12 mm Hg, so the range of "12-20 mm Hg" (statement 1) is too high for a healthy adult. The listed ranges for LV end-diastolic volume (70-100 ml/$m^2$), pulmonary vascular resistance (20-120 dyn·s·$cm^{-5}$), and ejection fraction (0.55 to 0.80) are within normal physiological limits. Therefore statements 2, 3, and 4 are correct, and statement 1 is not.

**65.** (a) $PaO_2$ is decreased and $PaCO_2$ is either normal or low

In acute hypoxemic respiratory failure (Type I), patients have inadequate oxygenation (low $PaO_2$). They often respond by hyperventilating, leading to a normal or low $PaCO_2$. By contrast, a high $PaCO_2$ typically indicates hypoventilation (Type II respiratory failure). Hence the classic pattern in acute hypoxemic failure is low $PaO_2$ with normal or reduced $CO_2$ levels.

**66.** (d) A-4 B-1 C-3 D-2

1. Hypothyroidism → "Hung-up" reflexes (delayed relaxation of deep tendon reflexes) → (4)
2. Rheumatic carditis → can manifest conduction delays → Prolonged P–R interval → (1)
3. Subarachnoid hemorrhage → may cause preretinal (subhyaloid) hemorrhages → (3)
4. Morphine poisoning → classic cause of pinpoint pupils (miosis) → (2)

Hence A-4, B-1, C-3, D-2.

**67.** (d) tapping apical impulse

Signs of impaired ventricular function (heart failure) include elevated jugular venous pressure (raised JVP), pulmonary edema (often heard as late or end-inspiratory crepitations), and a narrowed pulse pressure if stroke volume is compromised. A "tapping" apex beat is instead classically associated with mitral stenosis, where one can palpate a palpable first heart sound/"tapping" quality. It is not indicative of reduced ventricular contractility. Therefore (d) is the "except" item.

**68.** (d) 1, 2 and 4

Coarctation of the aorta is indeed associated with Turner syndrome (1). It classically occurs just distal to the origin of the left subclavian artery, near the ligamentum arteriosum (2). About 50–85% of patients have a bicuspid aortic valve (4). However, coarctation is actually more common in males (approximately 2:1 or 3:1 ratio), so statement (3)—"twice as common in females"—is incorrect. Therefore, the correct set is statements 1, 2, and 4.

**69.** (a) Ventricular fibrillation

In cardiac arrest, the heart frequently degenerates into a chaotic, uncoordinated electrical activity known as ventricular fibrillation (VF). This arrhythmia results in no effective cardiac output, culminating in circulatory collapse. Although other rhythms (like asystole or pulseless VT) can also be seen, VF is one of the most common immediate lethal rhythms in sudden cardiac arrest, hence the "most likely" among the listed options.

**70.** (a) IgM Anti HBc

IgM antibody to Hepatitis B core antigen (IgM anti-HBc) appears early in the course of acute HBV infection and remains the most specific marker of recent infection. Its presence indicates that the patient has either active acute hepatitis or is in the early convalescent phase. By contrast, IgG anti-HBs usually appears later (indicating recovery or immunity), HBsAg can remain positive in chronic cases, and IgM anti-HBe is less commonly used than IgM anti-HBc to confirm recent infection.

**71.** (a) anterior horn cell

Fibrillation potentials on EMG typically point to denervation (i.e., lesion in the anterior horn cell or peripheral nerve). The classical scenario of a young child with predominantly distal muscle weakness, facial sparing, reduced deep tendon reflexes, and EMG changes fits best with an anterior horn cell disorder (e.g., spinal muscular atrophy/Werdnig-Hoffmann disease). Peripheral nerve pathologies often have a different distribution of weakness or sensory

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(emesis, lavage, or charcoal) can do more harm than good with volatile hydrocarbons.

**88.** (a) 0% and 100%

A person "suffering from sickle cell anaemia" is typically genotype SS. Her husband, "with no abnormality," is genotype AA. Every child inherits one S allele from the mother and one A allele from the father, producing genotype AS, i.e. the sickle cell trait. Hence none of the children will be SS (sickle cell disease), and all (100%) will carry the AS trait.

**89.** (b) 7 hydrocholesterol

The skin contains 7-dehydrocholesterol (often referred to in simplified form as "7 hydrocholesterol") as the precursor for vitamin D synthesis. When exposed to UVB radiation from sunlight, this precursor is converted to cholecalciferol (vitamin $D_3$). The 25-hydroxy (calcidiol) and 1,25-dihydroxy (calcitriol) forms occur subsequently in the liver and kidney. "Calciferol" is a more general term and not specifically the naturally occurring precursor in skin.

**90.** (b) Measles

Warthin-Finkeldey giant cells are large multinucleated cells found in lymphoid tissues (e.g., tonsils) in the early stages of measles infection. They are distinct from the typical intranuclear or intracytoplasmic inclusions seen in other viral infections. Their presence helps pathologists confirm measles in a histopathologic specimen.

**91.** (b) increase cell membrane permeability to specific ions

Ionophore antibiotics form channels or otherwise facilitate the transport of certain ions across biological membranes, disrupting normal ionic gradients. They do not directly inhibit cell wall synthesis (as β-lactams do), nor do they block transcription/translation specifically (like rifampin or macrolides). Instead, they raise permeability to target ions, collapsing the ion gradients crucial for cell function.

**92.** (a) DNA amplification

Polymerase Chain Reaction (PCR) is a rapid, specific method for amplifying a chosen segment of DNA exponentially. Each cycle doubles the amount of the target sequence, enabling even trace amounts of DNA to become abundant enough for analysis. While PCR can precede sequencing or library screening, its primary purpose is to amplify DNA, not to sequence it directly or to synthesize polymerases.

**93.** (d) terrace cultivation

On hilly slopes, rainfall runoff can quickly cause severe soil erosion. "Terracing" creates a series of stepped flat areas that reduce water velocity, give water time to soak in, and minimize topsoil loss. This traditional agricultural method is recognized worldwide for effective soil and water conservation. Channelizing water and building dykes can help in certain terrains but are less consistently effective on steep slopes. Jhum (slash-and-burn) cultivation can actually increase soil erosion.

**94.** (c) bark from stem of Taxus sp.

Taxol (paclitaxel) is a potent anticancer drug originally isolated from the bark of the Pacific yew tree, Taxus brevifolia. It stabilizes microtubules and prevents their depolymerization, thereby blocking cell division in rapidly proliferating tumor cells. While related species (e.g., Taxus baccata) also produce paclitaxel or related compounds, the classic source is the bark of the Taxus genus.

**95.** (d) prevent the escape of heat waves reradiated from the Earth's surface

Greenhouse gases ($CO_2$, methane, water vapor, etc.) absorb and re-emit infrared radiation, preventing it from freely escaping into space. This "greenhouse effect" warms the lower atmosphere, much like the glass in a greenhouse traps heat. They are not named because they are produced by plants or used in greenhouses specifically. While they do influence overall climate balance, the key point is that they trap outgoing terrestrial radiation.

**96.** (c) insect pests

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or burr cells in specific conditions, the universal compensatory hallmark of hemolysis is an elevated reticulocyte count, reflecting increased RBC production.

**80.** (d) Von Willebrand Factor

The body's principal natural anticoagulants include antithrombin III, protein C, and protein S. Von Willebrand Factor (vWF) has a procoagulant role: it helps platelets adhere to subendothelial collagen and also stabilizes factor VIII. Thus, vWF is not an anticoagulant but rather a key factor promoting hemostasis.

**81.** (b) 8 – 10 weeks

Fetal thyroid tissue begins to form around 3–4 weeks of gestation, but it becomes capable of actively trapping iodine and synthesizing thyroid hormones around weeks 10–12. Among the given ranges, "8–10 weeks" is the closest to this recognized initial onset period. By 10–12 weeks, the fetal thyroid is more definitively functional.

**82.** (b) Homocystinuria

Homocystinuria (commonly due to cystathionine β-synthase deficiency) leads to elevated homocysteine levels that predispose to premature atherosclerosis and thromboses, especially in veins and arteries. It can present with lens subluxation, skeletal abnormalities, and a high risk of stroke or other vascular events. Phenylketonuria, galactosemia, and Gaucher's disease have other metabolic derangements but are not classically associated with a strong hypercoagulable state and thromboembolism.

**83.** (d) 18 months

Standard HIV antibody tests (ELISA/Western blot) can be falsely positive in younger infants because of passively transferred maternal IgG. Typically, these maternal antibodies wane over the first 12–18 months of life. By around 18 months, a positive ELISA in the child more reliably indicates true HIV infection. (In practice, virologic tests such as PCR can detect HIV earlier, but for purely antibody-based tests, 18 months is the safer "cutoff" for diagnostic reliability.)

**84.** (b) ABO incompatibility

A neonate with a positive direct antiglobulin (Coombs) test and spherocytes suggests an immune-mediated hemolysis. ABO hemolytic disease of the newborn often presents early (first 24–48 hours) with jaundice, can display spherocytes on smear, and is typically Coombs-positive. Although hereditary spherocytosis also shows spherocytes, it does not cause a positive direct Coombs' test. G6PD deficiency has a negative Coombs' test and different triggers.

**85.** (b) Niacin

This classic triad describes pellagra, caused by niacin (vitamin $B_3$) deficiency. Patients develop dermatitis (especially in sun-exposed areas), diarrhea, and neuropsychiatric manifestations sometimes labeled "dementia." Advanced cases can be fatal if untreated. Thiamine deficiency leads to beriberi/Wernicke-Korsakoff, riboflavin to angular stomatitis/cheilosis, and pyridoxine deficiency can cause sideroblastic anemia and neuropathies, but none produce the classic "3 Ds."

**86.** (a) Cushing's syndrome

Hyperkalemia can result from massive cell breakdown (crush injury, intravascular hemolysis) and from decreased excretion (renal failure). Cushing's syndrome, however, typically features an excess of glucocorticoids which may have mineralocorticoid-like activity, or it is frequently associated with hyperaldosteronism (in some etiologies), leading to hypokalemia rather than hyperkalemia. Thus, (a) is the one that generally does not cause elevated serum potassium.

**87.** (c) chest X-ray and observation

Ingestion of kerosene or other hydrocarbons carries the main risk of aspiration and subsequent chemical pneumonitis. Because the patient is asymptomatic, inducing emesis or performing lavage is contraindicated due to the added risk of aspiration. Instead, supportive management and careful observation are advised. A chest X-ray helps detect early signs of aspiration pneumonia. Active interventions

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involvement, and neuromuscular junction/muscle diseases have different EMG findings.

**72.** (c) rectal biopsy

In Hirschsprung disease (congenital aganglionic megacolon), the definitive test is a rectal biopsy demonstrating absence of ganglion cells (both submucosal [Meissner's] and myenteric [Auerbach's] plexuses) in the distal bowel. Barium enema or anorectal manometry can be useful screening tools, but the final confirmation always relies on the histological proof of aganglionosis on biopsy.

**73.** (b) Measles

Subacute sclerosing panencephalitis (SSPE) is a progressive, fatal degenerative disease of the central nervous system that arises years after infection with a mutant measles virus (typically acquired in early childhood). It is not linked with mumps, rubella, or polio. The measles virus undergoes persistent infection within the CNS, ultimately causing this delayed but severe encephalopathy.

**74.** (d) A-3 B-4 C-2 D-1

1. Acute pyogenic meningitis → Typically high protein, low glucose, and predominance of polymorphs → (3).
2. Tubercular meningitis → Elevated protein, lymphocytic pleocytosis, low glucose → (4).
3. Guillain-Barré syndrome → Albuminocytologic dissociation (elevated protein with few or no cells) → (2).
4. Neurocysticercosis → Often normal or near-normal CSF → (1).

Hence A=3, B=4, C=2, D=1.

**75.** (c) focal neurological signs

Idiopathic intracranial hypertension (pseudotumor cerebri) typically presents with raised intracranial pressure (headache, papilledema), leading to visual symptoms like blurred vision or diplopia. Apart from an abducens (VI) nerve palsy, major focal neurological deficits are unusual. It often has a self-limiting course, especially with medical measures (e.g., acetazolamide). Hence, "focal neurological signs" in the sense of hemiparesis or localized deficits are not characteristic, making (c) the correct "except."

**76.** (b) Factor VIII

Vitamin K is necessary for the γ-carboxylation of factors II, VII, IX, and X, as well as proteins C and S. Factor VIII is not vitamin K-dependent; it is synthesized independently and often affected in hemophilia A. Thus, among the listed options, factor VIII is the correct answer for "except," meaning it is not part of the vitamin K-dependent coagulation cascade.

**77.** (b) Acute leukaemia

In a toddler with a short history (acute onset) of severe pallor, petechiae (platelet-related bleeding), and splenomegaly, acute leukemia (often acute lymphoblastic leukemia) is highly suspect. Thalassemia major usually presents earlier in life with chronic pallor and is less likely to produce marked thrombocytopenic petechiae. Hodgkin's lymphoma typically shows lymphadenopathy plus B-symptoms. ITP often causes petechiae but not usually significant splenomegaly and severe pallor.

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**78.** (c) A-2 B-3 C-4 D-1

1. Acute lymphoblastic leukemia (A) → often presents with lymphadenopathy and petechiae → (2).
2. Juvenile rheumatoid arthritis (B) → swelling of joints (including small joints of hands in the rheumatoid subtype) → (3).
3. Thalassemia (C) → marked hepatosplenomegaly and severe pallor → (4).
4. Hemophilia (D) → bleeding into joints, often the knee, causing recurrent hemarthrosis → (1).

Hence A=2, B=3, C=4, D=1.

**79.** (d) Reticulocyte cells

In hemolytic anemias, the bone marrow responds to increased RBC destruction by boosting erythropoiesis, leading to a raised reticulocyte count. Although certain forms of hemolysis may show sickle cells (sickle cell disease), target cells (thalassemia, liver disease),

Bacillus thuringiensis (Bt) produces crystalline protein toxins (Bt toxins) lethal to many insect larvae, especially certain moths, beetles, and mosquitoes. When ingested by the insect, the toxin disrupts its gut lining, causing death. Bt formulations are widely used in organic farming and gardening as a biopesticide. There is also Bt-based genetic engineering of crops (e.g., Bt cotton, Bt corn) that express the toxin for inherent insect resistance.

**97.** (a) Blue-green algae

Blue-green algae (cyanobacteria), such as Anabaena and Nostoc, can fix atmospheric nitrogen in specialized cells (heterocysts) and release bioavailable nitrogen into the environment. In paddy fields, these nitrogen-fixing cyanobacteria help enrich soil fertility and reduce the need for chemical fertilizers. Brown, green, and red algae typically require marine or freshwater habitats without fulfilling this direct nitrogen-fixing role in rice fields.

**98.** (d) 1, 2 and 3

Plant tissue culture encompasses techniques such as meristem culture (helping produce virus-free plants), micropropagation (mass multiplication of elite genotypes), and callus/suspension cultures (which can be used to produce valuable secondary metabolites like alkaloids). Thus, all three listed uses—virus-free stock, vegetative propagation of superior lines, and metabolite production—are recognized applications of plant tissue culture methods.

**99.** (b) Plants in marshy areas with breathing roots

Mangrove vegetation grows along tropical or subtropical tidal coastlines in waterlogged, saline, or brackish habitats. These plants often possess specialized "pneumatophores" or "breathing roots" that project above the water or mud to obtain oxygen in anaerobic soils. They are not typical desert succulents, do not form grasslands, and though they can yield timber, the defining feature is their intertidal adaptation with specialized root structures.

**100.** (c) 2 and 3 only

Sodium benzoate is a commonly used preservative in acidic foods (like fruit juices). Potassium metabisulfite (meta-bisulphate) also functions as a preservative and antioxidant in many food and beverage products. Ethylene dibromide is predominantly used as a fumigant (not generally recognized as a direct food preservative). Hence, only (2) and (3) are standard preservative chemicals, making option (c) correct.

**101.** (a) cellulose

Rayon is a semi-synthetic fiber produced by chemically processing natural cellulose (often from wood pulp). The cellulose is dissolved and then re-precipitated into filament form (viscose process). By contrast, isoprene is key to natural rubber, polyethylene is a synthetic polymer from petroleum, and PVC (polyvinyl chloride) is also purely synthetic. Rayon is sometimes referred to as "artificial silk" but it fundamentally derives from cellulose.

**102.** (b) Red and blue

Chlorophyll pigments in green plants primarily absorb light in the red (around 660 nm) and blue (around 450 nm) regions of the visible spectrum. Green light is mostly reflected or transmitted, giving leaves their green color. Although other pigments extend the absorption range somewhat, red and blue remain the main energy-absorbing wavelengths critical for photosynthesis.

**103.** (a) Argon

Earth's dry atmosphere is roughly 78% nitrogen, 21% oxygen, and about 0.93% argon, with carbon dioxide at ~0.04% and trace amounts of other gases. This makes argon the third most abundant atmospheric gas by volume after nitrogen and oxygen. $CO_2$, hydrogen, and methane are present in far smaller proportions than argon.

**104.** (a) Gangetic West Bengal

Gangetic West Bengal, particularly the southern and central districts closer to the Bay of Bengal, typically get a high volume of rainfall during the southwest monsoon, often surpassing that of

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areas farther inland in Uttar Pradesh or Punjab. This region benefits from moisture-laden winds off the Bay of Bengal, which produce heavy, sustained rains.

**105.** (b) Tropical deciduous forest

Teak (Tectona grandis) is characteristically found in tropical moist and dry deciduous forests, not in the evergreen rain forests, thorn-scrub regions, or temperate forests. Deciduous trees typically shed leaves in the dry season to conserve water. Teak's wide distribution in peninsular India, for instance, exemplifies these tropical deciduous habitats.

**106.** (a) 1 only

Volcanoes do release carbon dioxide (among other gases) from the Earth's interior (statement 1). However, $CO_2$ is not typically recognized as a strong corrosive agent of metals under normal conditions (unlike acids or certain industrial pollutants). While carbon dioxide can form weak carbonic acid in water, it does not significantly corrode metals as a routine property (statement 2 is generally not considered correct).

**107.** (c) 1 and 3 only

Wildlife Sanctuaries in India do allow some limited human activity or resource use, subject to management (statement 1). National Parks have stricter protection, and their boundaries are clearly defined by law (statement 3). However, Biosphere Reserves are generally designed to protect a broad ecosystem or landscape, with multiple zones (core, buffer, transition) for conservation and sustainable use, not just "a few specific species" (so statement 2 is incorrect).

**108.** (d) Sulphur dioxide

Sulphur dioxide in the air can dissolve in moisture on surfaces to form acidic by-products, causing progressive damage to materials such as leather (and also to stone, metals, etc.). This leads to cracking, color changes, and weakening of the leather over time. While ozone is known to degrade rubber, $SO_2$ is more strongly associated with deteriorating leather and related goods by generating acidic conditions on their surfaces.

**109.** (a) Constitution of India

The Finance Commission of India is a constitutional body, established under Article 280 of the Constitution. It is formed every five years (or earlier if needed) to make recommendations on the distribution of tax revenues between the Union and the States. Because its creation, powers, and functions are explicitly enshrined in the Constitution, it "derives its authority" from that foundational legal document, not merely by any statutory law or presidential order.

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**110.** (d) Polar

Polar regions are extremely cold, and cold air can hold very little moisture. Consequently, their relative humidity is actually quite low, often leading to very dry conditions even though the ground may be covered with ice/snow. By contrast, equatorial and monsoon areas are known for high humidity, and even prairies, while not as humid as the tropics, generally have more moisture in the air than polar regions.

**111.** (d) ensuring safe handling, safe use and safe trans-boundary movement of living modified organisms

The Cartagena Protocol on Biosafety (under the Convention on Biological Diversity) specifically addresses the safe transfer, handling, and use of Living Modified Organisms (LMOs) that may have adverse effects on biological diversity, focusing on transboundary movements. While monitoring and regulation are part of it, the Protocol's central intent is to facilitate informed decisions and risk assessment on LMOs moving across borders, thus "ensuring safe handling" and preventing ecological harm.

**112.** (c) Ozone

A secondary pollutant is not emitted directly but forms via reactions of primary pollutants in the atmosphere. Ozone in the troposphere (ground-level ozone) forms when nitrogen oxides ($NO_x$) and volatile organic compounds (VOCs) react in sunlight. Benzene, NO, $NO_2$, and $SO_2$ are considered primary pollutants. Tropospheric ozone thus qualifies as a secondary pollutant

that can cause respiratory irritation and smog formation.

**113.** (c) ecotone

An ecotone is the boundary or transition area between two different ecological communities or biomes, where species from both communities can overlap and interact. It often exhibits greater biodiversity due to the mix of species. "Ecological niche" refers to the functional role of a species, "ecocline" to a gradual environmental gradient, and "ecotype" to a genetically distinct population adapted to specific conditions.

**114.** (d) phosphates and nitrates

Excessive phosphates and nitrates from fertilizers, sewage, and industrial effluents enrich water bodies, spurring excessive algal and aquatic plant growth. As these organisms die and decompose, oxygen is depleted, harming fish and other aquatic life. This process—called eutrophication—often transforms lakes into oxygen-poor environments and can result in "algal blooms." Phosphates and nitrates are the key nutrients driving this overgrowth.

**115.** (d) 1, 2 and 3

Hydrogen sulfide ($H_2S$) can be released by decomposition of organic material in coal pits, by anaerobic bacterial activity in sewers, and also from volcanic eruptions, as sulfur compounds are expelled from deep within the Earth. All three are recognized sources of $H_2S$.

**116.** (d) 1, 2 and 3

Methane is released from ruminant digestion (cattle), flooded rice fields (where anaerobic microbes produce $CH_4$ in the soil), and natural wetlands (again via anaerobic microbial decomposition). All three are well-known major contributors to atmospheric methane, making them significant sources of this greenhouse gas.

**117.** (c) 6 months

Under the Indian Constitution (Part IX), if a Panchayat is dissolved before its five-year term expires, the new Panchayat must be constituted within six months from the date of its dissolution. This is to ensure continuity of local self-government. However, if the remainder of the dissolved Panchayat's term is less than six months, no elections may be necessary for that brief period.

**118.** (c) Gambusia fish

Gambusia (also called "mosquito fish") preys on mosquito larvae, thus reducing the local mosquito population. They are commonly introduced into stagnant water bodies—ponds, wells, or ornamental pools—to help control mosquitoes naturally. Crabs, dogfish (a type of shark), and snails are not used for that purpose.

**119.** (b) 2 only

Infant Mortality Rate (IMR) conventionally counts the deaths of children under one year of age per 1,000 (or sometimes per 100) live births in a given year. Statement (1) describes neonatal mortality (within the first month), not the entire first year. Statement (2) is essentially correct—IMR is defined as the number of infant (<1 year old) deaths per 100 (or 1,000) live births in that year.

**120.** (b) People of India

According to the Preamble and the basic structure of the Indian Constitution, all authority ultimately flows from the people themselves—"We the People of India…" Sovereignty is vested in the people, who exercise it through their Constitution and their elected representatives. The Constitution is the supreme legal document, but its legitimacy and power are derived from the will of the people.

END

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# QUESTION PAPER 2012

1. Roth's spots are found in
   (a) Acute rheumatic fever
   (b) Congestive cardiac failure
   (c) Infective endocarditis
   (d) Restrictive cardiomyopathy

2. A 42-year-old smoker has developed an acute anterior wall myocardial infarction. The coronary angiogram done on him is likely to show an obstruction of the
   (a) Left anterior descending artery
   (b) Left posterior descending artery
   (c) Right coronary artery
   (d) Circumflex artery

3. As regards Kala-azar, the following statements are correct except
   (a) It is caused by Leishmania donovani
   (b) It is transmitted by the bite of male sand flies
   (c) It is the promastigote form of parasite, which is transmitted to the human host at the time the sand fly bites the host
   (d) A patient may develop post Kala-azar dermal leishmaniasis during the course of therapy or a few months later

4. The criteria for carrying out a mitral valvuloplasty include the following except
   (a) Significant symptoms
   (b) Isolated mitral stenosis
   (c) Mobile non-calcified valve
   (d) Left atrial thrombus

5. 'Cannon' a wave is seen in
   (a) Complete heart block
   (b) Left ventricular hypertrophy
   (c) Mitral stenosis
   (d) Right ventricular hypertrophy

6. Match List I with List II and select the correct answer using the code given below the Lists :

| | **List I (Genetic disorder)** | | **List II (Gene defect)** |
|---|---|---|---|
| A | Familial breast cancer | 1 | FGFR |
| B | Marfan's syndrome | 2 | FBN-1 |
| C | Cystic fibrosis | 3 | BRCA-1 |
| D | Achondroplasia | 4 | CFTR |

Code :
(a) A-1 B-3C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-3 B-2 C-4 D-1
(d) A-3 B-1 C-2 D-4

7. Match List I with List II and select the correct answer using the code given below the Lists :

| | **List I (Disease)** | | **List II (Drugs)** |
|---|---|---|---|
| A | Parkinsonism | 1 | Riluzole |
| B | Migraine | 2 | Levodopa |
| C | Motor Neuron Disease | 3 | Ergotamine |
| D | Multiple sclerosis | 4 | Interferon-β1a |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-2 B-3 C-1 D-4

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8. On an E.C.G. tracing, the presence of right atrial hypertrophy is suggested by-
   (a) Tall spiky P wave
   (b) Widened P wave
   (c) Prolonged P-R interval
   (d) Increased P-Q segment

9. Which one of the following is not raised in intravascular haemolysis ?
   (a) Bilirubin
   (b) LDH

(c) Reticulocyte count
(d) Haptoglobin

**10.** Which one of the following is not correct regarding Left Bundle Branch Block (LBBB) ?
(a) Coronary artery disease can be one of the possible aetiologies of LBBB
(b) ST segment elevation is an integral part of LBBB
(c) QRS complex is prolonged in LBBB
(d) Cardiomyopathy is another possible aetiology of LBBB

**11.** All of the following are excitatory neurotransmitters except
(a) Gamma Amino Butyric Acid
(b) Acetylcholine
(c) Dopamine
(d) Serotonin

**12.** A young man is prescribed parenteral antibiotics for respiratory tract infection. He collapses immediately after receiving the first dose, with tachycardia, wheezing and a drop in blood pressure. The most appropriate immediate intervention in this situation would be to administer
(a) Intravenous saline
(b) Intravenous hydrocortisone
(c) Subcutaneous epinephrine
(d) Nebulized salbutamol

**13.** The most common aetiology of short stature is
(a) Thyroxine deficiency
(b) Growth hormone deficiency
(c) Systemic disease
(d) Constitutional growth delay

**14.** Which one of the following is not a useful drug for the initial management of a case with status epilepticus ?
(a) IV phenytoin
(b) IV clobazam
(c) IV thiopental
(d) IV sodium valproate

**15.** To complete the transfusion of a unit of packed Red Blood Cells in a patient with anaemia, how much time should be taken optimally ?
(a) 1-3 hours
(b) 4-5 hours
(c) 6-7 hours
(d) 8-9 hours

**16.** Massive splenomegaly is not a feature of
(a) Acute lymphocytic leukaemia
(b) Chronic myeloid leukaemia
(c) Myelofibrosis with myeloid metaplasia
(d) Hairy Cell leukaemia

**17.** Which of the following is not a correct combination between a brain area and its function ?
(a) Limbic network : Retentive memory
(b) Frontoparietal network : Face and object recognition
(c) Perisylvian network : Language
(d) Prefrontal network : Attention and behaviour

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**18.** The term Vincent's angina is used for
(a) Ischaemic chest pain, characterised by ST segment depression on E.C.G.
(b) Post myocardial infarction angina
(c) Painful, deep, sloughing infection of the gums from commensal organisms of the mouth
(d) Chest pain in a case of achalasia cardia

**19.** Match List I with List II and select the correct answer using the code given below the Lists :

| | **List I (Phase of jugular venous pulse)** | | **List II (Mechanism)** |
|---|---|---|---|
| A | 'y' descent | 1 | Emptying of the blood from right atrium into right ventricle |
| B | 'x' descent | 2 | Atrial relaxation |

(b) Immunoglobulins
(c) Gamma globulins
(d) Prostaglandins

**57.** A particularly chronic low-grade long lasting depression is known as
(a) Unipolar depression
(b) Bipolar depression
(c) Dysthymia
(d) Major depressive disorder

**58.** Consider the following :
1. Carcinoma of the stomach
2. Obesity
3. Insulin resistance
4. Haemochromatosis

Which of the above is/are associated with acanthosis nigricans ?
(a) 1 only
(b) 4 only
(c) 1, 2 and 3
(d) 2, 3 and 4

**59.** Reiter's syndrome is constituted by the following except
(a) Seronegative arthritis
(b) Non-specific urethritis
(c) Conjunctivitis
(d) Lymphadenitis

**60.** The presence of 'swan-neck' deformity, 'buttonhole' deformity, 'Z' deformity of the thumb and 'Baker's cysts' suggest which of the following?
(a) Reiter's syndrome
(b) Gouty arthritis
(c) Psoriatic arthritis
(d) Rheumatoid arthritis

**61.** Regarding rheumatoid arthritis, the following statements are true except
(a) The cricoarytenoid joint may be involved
(b) HLA-D4 and HLA-DR4 are positive in patients with seropositive rheumatoid arthritis
(c) Subcutaneous nodules are more frequent in seronegative patients
(d) Diffuse intestinal fibrosis and pneumonitis may occur

**62.** Quinine is prescribed for the treatment of chloroquine resistant falciparum malaria. The oral dose of quinine is about
(a) 10 mg/kg per day
(b) 20 mg/kg per day
(c) 30 mg/kg per day
(d) 50 mg/kg per day

**63.** Which of the following medical conditions does not mimic an anxiety disorder state?
(a) Hypothyroidism
(b) Pheochromocytoma
(c) Hypoglycaemia
(d) Alcohol withdrawal

**64.** Each of the following is a hallmark of celiac sprue except
(a) It is a gluten-sensitive enteropathy
(b) It may get complicated by lymphoma
(c) It is diagnosed on the basis of a small-intestinal biopsy
(d) It may be associated with diabetes insipidus

**65.** Regarding syphilis, the following statements are correct except
(a) The disease is caused by Treponema pallidum, a spirochete
(b) Cardiovascular syphilis often leads to dissecting aneurysm of the aorta
(c) Regional lymphadenopathy accompanies the primary lesion appearing within one week of the onset
(d) Fluorescent treponemal antibody-absorption test is a highly specific test for the diagnosis of disease

**66.** The most common cause of preventable blindness in children in India is
(a) Trachoma
(b) Traumatic cataract
(c) Vitamin A deficiency
(d) Recurrent conjunctivitis

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28. The following are features of distal renal tubular acidosis except
(a) Low serum potassium
(b) Low serum chloride
(c) Non-anion-gap acidosis
(d) High urinary ammonium

29. Regarding hepatobiliary disease, which of the following statements is true ?
(a) Hepatitis B is the most common viral cause of cirrhosis worldwide
(b) Fewer than 5% of patients with chronic hepatitis C will develop cirrhosis
(c) In India, Hepatitis B is transmitted primarily by the faeco-oral route
(d) Hepatitis C is a more frequent cause for fulminant hepatitis than Hepatitis B infection

30. Wide fixed splitting of the second heart sound is typical of
(a) Atrial septal defect
(b) Ventricular septal defect
(c) Patent ductus arteriosus
(d) Coarctation of aorta

31. A 10-month-old girl presents with extensive pruritis over the face and lichenification and creases below the eyes. She has a family history of asthma and allergic rhinitis. The most likely diagnosis is
(a) Atopic dermatitis
(b) Allergic contact dermatitis
(c) Seborrhoeic dermatitis
(d) Neurodermatitis.

32. Consider the following :
A 20-year-old dark man has hypopigmented macules over the chest, trunk and back. The KOH examination shows 'spaghetti and meatball' appearance. Which of the following drugs will be appropriate in the oral treatment of this condition ?
1. Terbinafine
2. Griseofulvin
3. Itraconazole
4. Ketoconazole
Select the correct answer using the code given below:
(a) 1 and 2
(b) 2 and 3
(c) 1 and 4
(d) 3 and 4

33. A 4-month-old infant presents with itchy papules and burrows on the wrist, web spaces, genitalia and trunk. The most appropriate treatment for this is
(a) Permethrin 1% (w/w) cream
(b) Permethrin 5% (w/w) cream
(c) Gamma benzene hexachloride 1% lotion
(d) Benzyl benzoate 25% lotion

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34. A 14-year-old girl is brought with the alleged consumption of a liquid poison. Her clinical examination reveals the pulse rate to be 52/min, BP 100/70 mmHg, and respiratory rate 8/min. She has shallow breathing. Her skin is cold and clammy. She has excessive salivation. On auscultation of the lungs, she has crepitations. The CNS examination reveals all 4 limbs to be flaccid, and she has fasciculations. What is the most probable poison ?
(a) Barbiturates
(b) Copper sulphate
(c) Opioids
(d) Organophosphorus compound

35. Beta-blockers are not recommended for diabetic patients who are on insulin because
(a) They reduce the efficiency of insulin
(b) They mask the symptoms of hypoglycaemia
(c) They produce dermatitis herpetiformis
(d) They produce congestive heart failure

36. The important physiological function of bile acids is
(a) They facilitate the absorption of dietary fats
(b) They conjugate with toxic substances, and thus facilitate their excretion
(c) They facilitate the excretion of breakdown products of haemoglobin
(d) They facilitate the absorption of vitamin

| | | | |
|---|---|---|---|
| C | 'v' wave | 3 | Filling of the right atrium from the vena cava |
| D | 'a' wave | 4 | Onset of atrial systole |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-1 B-2 C-3 D-4

**20.** Match List I with List II and select the correct answer using the code given below the Lists :

| | **List I (Poison)** | | **List II (Antidote)** |
|---|---|---|---|
| A | Opium | 1 | Flumazenil |
| B | Cyanide | 2 | Naloxone |
| C | Mercury | 3 | Dimercapto-1-propane sulphate |
| D | Diazepam | 4 | Sodium thiosulphate |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-2 B-4 C-3 D-1
(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-2 D-4

**21.** An 80-year-old man presents with breathlessness which wakes him up from sleep. His pulse is 90/min and BP is 100/60 mmHg. The examination reveals pedal oedema and basal rales in both lungs. He has dyspnoea on exertion and he has an off and on history of chest pain for the last many years. He has a soft systolic murmur at the apex. This patient may benefit from all of the following except
(a) Furosemide
(b) ACE inhibitor
(c) Beta blocker
(d) Calcium channel blocker

**22.** A patient is admitted with fever and chills for the last seven days and drowsiness for the last two days. He is febrile, icteric and semiconscious with a pulse of 110/min and BP 100/70 mmHg. The peripheral smear shows the ring form of Plasmodium falciparum – 100 infected RBCs per 1000. The patient should be started on
(a) Intravenous quinine
(b) Quinine through Ryle's tube
(c) Intravenous chloroquine
(d) Oral primaquine

**23.** 'Fleeting pulmonary infiltrates' on sequential chest skiagrams in an individual who suffers from asthma are characteristics of
(a) Allergic bronchopulmonary aspergillosis
(b) M. tuberculosis infection
(c) Pneumocystis jirovecii pneumonia
(d) Nocardia infection

**24.** A young patient presenting with massive haematemesis was found to have splenomegaly. The most likely source of bleeding is
(a) Duodenal ulcer
(b) Oesophageal varices
(c) Erosive mucosal disease
(d) Gastric ulcer

**25.** Epidemic dropsy results from
(a) Dhatura poisoning
(b) Argemone poisoning
(c) Aluminium phosphide poisoning
(d) Organophosphorus poisoning

**26.** The drug of choice for cryptococcal meningitis is
(a) Fluconazole
(b) Ketoconazole
(c) Amphotericin B
(d) Pentamidine

**27.** Sensory neuropathy is not a characteristic feature of
(a) Lead poisoning
(b) Diabetes mellitus
(c) Beri-beri
(d) Chronic alcoholism

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47. Consider the following statements regarding HIV infection in pregnant women :
1. The maternal to foetal transmission of HIV mostly occurs during the perinatal period.
2. The risk of vertical transmission increases in direct proportion to the maternal HIV viral load.
3. Breast-feeding is an important route of HIV transmission to the infant.

Which of the statements given above is/are correct ?
(a) 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

48. A 35-year-old nondiabetic, nonhypertensive individual presents to casualty with a sudden bursting headache and altered sensorium. What is the most likely diagnosis ?
(a) Meningitis
(b) Encephalitis
(c) Intracerebral haemorrhage
(d) Intracranial tumour

49. Which of the following is a first-generation cephalosporin ?
(a) Cefaclor
(b) Cefazolin
(c) Cefoxitin
(d) Cefepime

50. Which of the following drugs is useful in the treatment of 'Febrile neutropenia'?
(a) Fluconazole
(b) Itraconazole
(c) Voriconazole
(d) Flucytosine

51. The drug used for the treatment of Familial Mediterranean Fever is
(a) Iododuxorubicin
(b) Doxycycline
(c) Colchicine
(d) Hydroxy chloroquine

52. A patient presents to the casualty with the history of chest pain and hypotension. The ECG reveals changes of hyperacute inferior wall myocardial infarction. What other cardiac condition would you like to exclude with this myocardial infarction ?
(a) Right ventricular infarction
(b) Lateral wall infarction
(c) Hypersensitive carotid sinus
(d) Septum secundum atrial septal defect

53. A 25-year-old primigravida, who is in the first trimester of pregnancy, reports to the Emergency Room with shortness of breath, cough and chest pain. Her chest examination reveals that her lungs are unremarkable, whereas she has signs of mitral stenosis on cardiac auscultation. Consider the following statements :
1. Doppler echocardiography will provide definitive evaluation of the mitral stenosis.
2. The treatment of choice is balloon valvuloplasty or mitral valvotomy or mitral valve replacement.
3. She requires oral anticoagulants.
4. She only requires anti-failure measures.

Which of the statements given above is/are correct ?
(a) 1 and 2
(b) 1 and 3
(c) 3 and 4
(d) 4 only

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54. The following conditions cause non-scarring alopecia except
(a) Alopecia areata
(b) Tinea capitis
(c) Secondary syphilis
(d) Sarcoidosis

55. Which of the following toxicity is specific to anthracyclines therapy ?
(a) Cardiac muscle damage
(b) Peripheral neuropathy
(c) Haemorrhagic cystitis
(d) Renal damage

56. Cellular immunity is affected by
(a) Cytokines

B12

37. Supplementation with which of the following vitamins during the antenatal period can prevent the neural tube defects in a baby ?
(a) Riboflavin
(b) Pyridoxine
(c) Folic acid
(d) Cyanocobalamine

38. A 60-year-old male hypertensive had a stroke two weeks prior to this sudden attack of dyspnoea. The present ECG shows changes of S1 Q3 T3 and the V/Q pulmonary scan shows major areas of reduced perfusion. What is the probable diagnosis ?
(a) Pneumothorax
(b) Congestive cardiac failure
(c) Pulmonary thromboembolism
(d) Psychogenic dysfunction

39. Which of the following is not an inborn error of metabolism ?
(a) Thalassaemia
(b) Wilson's disease
(c) Phenylketonuria
(d) Galactosaemia

40. A 24-year-old HIV positive male presents with fever, cough and breathlessness for the last one week. On clinical examination, he is emaciated, tachypnoeic and has scattered crepitations over both the lung fields. The chest X-ray shows bilateral interstitial infiltrates. The initial antibiotic of choice would be
(a) Penicillin
(b) Cotrimoxazole
(c) Amphotericin B
(d) Acyclovir

41. The typhus group of fevers are transmitted by the following :
1. Mites
2. Human body louse
3. Sand fly
4. Fleas
Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1, 3 and 4
(c) 1, 2 and 4
(d) 2, 3 and 4

42. Which of the following is the common side effect of isoniazid ?
(a) Diarrhoea
(b) Hypertrophy
(c) Peripheral neuritis
(d) Acute tubular necrosis

43. Which of the following statements is not true regarding haemolytic uraemic syndrome ?
(a) It is a microangiopathic haemolytic anaemia
(b) Thrombocytopenia and schistocytes are seen in the peripheral blood smear
(c) Renal insufficiency is a complication
(d) Direct Coombs' test is positive

44. Secondary syphilis is characterized by all of the following except
(a) Generalised mucocutaneous lesions
(b) Generalised tender lymphadenopathy
(c) Constitutional symptoms like fever, and weight loss
(d) Painless silver-grey mucosal erosions

45. The gravest complication of Falciparum malaria is
(a) Cerebral malaria
(b) Acute pulmonary oedema
(c) Algid malaria
(d) Metabolic acidosis

46. Each of the following antitubercular drugs is potentially hepatotoxic except
(a) Ethambutol
(b) Isoniazid
(c) Rifampicin
(d) Pyrazinamide

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**67.** Consider the following statements regarding mitral stenosis (MS) :
1. In isolated MS, the left ventricular diastolic pressure is normal.
2. In most patients with moderate MS, the cardiac output is normal or almost so at rest.
3. Severe pulmonary hypertension results in tricuspid regurgitation.
4. Left ventricular ejection fraction is markedly reduced.

Which of the statements given above is/are correct ?
(a) 1, 2 and 4
(b) 1, 2 and 3
(c) 3 and 4 only
(d) 1, 3 and 4

**68.** A patient presents with shortness of breath. On clinical examination, he is found to have a heaving apex and a systolic murmur that intensifies on Valsalva's manoeuvre. The most likely diagnosis is
(a) Valvular aortic stenosis
(b) Ventricular septal defect
(c) Hypertrophic cardiomyopathy
(d) Atrial septal defect

**69.** Which one of the following treatments is effective in primary biliary cirrhosis ?
(a) Prednisolone
(b) Interferon α-2B
(c) D-Penicillamine
(d) Ursodeoxycholic acid

**70.** The following features are hallmarks of post-primary pulmonary tuberculosis except
(a) It results from endogenous reactivation of latent infection
(b) The disease is usually localized to the anterior segment of the upper lobe
(c) If cavity formation occurs, satellite lesions result from the discharge of liquefied contents into the airways
(d) Up to one-third of untreated patients die due to severe pulmonary TB within a few weeks or months after onset

**71.** The approximate protein content of breast milk is
(a) 0·9 – 1·1 g/dL
(b) 2·0 – 3·0 g/dL
(c) 3·5 – 4·0 g/dL
(d) 5·0 – 5·5 g/dL

**72.** The following are the hallmarks of Nephrotic syndrome in children except
(a) Severe proteinuria 2 gm/$m^2$/day
(b) Hypoalbuminaemia < 2.5 g/dL
(c) Gross haematuria
(d) Edema

**73.** Which of the following is not a feature of Sydenham's chorea ?
(a) Hypotonia
(b) Unintelligible Speech
(c) Emotional lability
(d) Seizures

**74.** At what wavelength is phototherapy most effective ?
(a) 150 nm
(b) 250 nm
(c) 350 nm
(d) 450 nm

**75.** The following are inherited as autosomal recessive disorders except
(a) Phenylketonuria
(b) Galactosaemia
(c) Achondroplasia
(d) Wilson's disease

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**76.** A 5-year-old boy is suffering from minimal change nephrotic syndrome. For bringing about a remission induction, the drug of choice is
(a) Furosemide
(b) Levamisole
(c) Cyclophosphamide
(d) Prednisolone

**77.** Subacute sclerosing panencephalitis is associated with
(a) Mumps

| | | | |
|---|---|---|---|
| B | Manas | 2 | Assam |
| C | Nokrek | 3 | Meghalaya |
| D | Simlipal | 4 | Orissa |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-1 B-2 C-3 D-4
(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-2 D-4

**111.** Match List I with List II and select the correct answer using the code given below the Lists :

| | **List I (City)** | | **List II (Industry)** |
|---|---|---|---|
| A | Bhopal | 1 | Steel |
| B | Kapurthala | 2 | Heavy electricals |
| C | Visakhapatnam | 3 | Petrochemicals |
| D | Vadodara | 4 | Rail coaches |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-2 B-4 C-1 D-3

**112.** It is known that the yellow pigment curcumin in turmeric powder helps the body cells to resist infections. Recently, its exact action has been discovered. In this context which of the following statements is/are correct?
1. Curcumin stimulates the rapid multiplication of WBC that destroy the infectious microorganisms.
2. Curcumin molecules insert themselves into cell membranes and make the membranes resistant to invading microorganisms.
3. Curcumin stimulates the rapid synthesis of antibodies against the invading microorganisms.

Select the correct answer using the code given below:
(a) 1 only
(b) 1 and 3 only
(c) 2 only
(d) 1, 2 and 3

**113.** Consider the following rivers:
1. Betwa
2. Chambal
3. Sone

Which of the above join river Yamuna?
(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

**114.** Holography has applications in which of the following?
1. Data storage
2. Prevention of counterfeiting
3. Destruction of cancerous cells
4. Detection of kidney stones

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 1, 2 and 4 only
(c) 3 and 4 only
(d) 1, 2, 3 and 4

**115.** Consider the following statements:
1. Higher levels of ozone concentrations in the ambient air aggravates the severity and frequency of symptoms among asthmatics.
2. A short-term increase in particulate matter in the ambient air increases the chances of acute heart attacks.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**116.** With reference to the popular medicinal plant 'guggal' (Commiphora wightii), which of the following statements is/are correct?
1. It grows in the wild in the tropical rain forests of north-east India only.
2. The gum extract of the plant has the medicinal properties.
3. It helps in lowering the low-density lipoprotein cholesterol.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 and 3 only

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**90.** A 6-month-old male infant presents with progressive weakness, severe pallor, cardiac decompensation and splenomegaly. The peripheral smear shows microcytosis with normoblasts. What is the most likely diagnosis?
(a) Sickle cell disease
(b) Iron deficiency anaemia
(c) Thalassaemia
(d) Sideroblastic anaemia

**91.** With reference to the Total Sanitation Campaign, consider the following statements :
1. It is a project-based programme taking district as a unit.
2. At present, it is implemented in 300 selected rural districts of the country.
3. School Sanitation and Hygiene Education is one of the components in it.

Which of the statements given above is/are correct ?
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**92.** Cooking with solid fuel on open fires or traditional stoves results in high levels of indoor air pollution. The indoor smoke contains a range of health-damaging pollutants, which include all of the following except
(a) Lead oxide
(b) Carbon monoxide
(c) Sulphur oxides
(d) Benzopyrenes

**93.** With reference to pre-packed food items in India, it is mandatory to put which of the following information on the main label as per Food Safety and Standards (Packaging and Labelling) Regulation, 2011?
1. List of ingredients including additives.
2. Nutrition information.
3. Recommendations, if any, made by the medical profession.
4. Vegetarian/non-vegetarian (in the form of green or brown logo).

Select the correct answer using the code given below:
(a) 1, 2 and 3 only
(b) 3 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

**94.** Match List I with List II and select the correct answer using the code given below the Lists :

| | **List I (Town)** | | **List II (Industry)** |
|---|---|---|---|
| A | Cuttack | 1 | Paper |
| B | Indore | 2 | Glass |
| C | Kolhapur | 3 | Fertilizer |
| D | Ramagundam | 4 | Textile |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-2 C-1 D-3
(d) A-3 B-1 C-2 D-4

**95.** Which one of the following is not required for the formation of photochemical smog?
(a) Carbon monoxide
(b) Oxide of nitrogen
(c) Oxygen
(d) Sunlight

**96.** In India, in the wake of a natural disaster like cyclone, floods, or earthquake, the execution of relief work is essentially the responsibility of
(a) The Union Government
(b) The State Government
(c) Indian Armed Forces
(d) Indian Red Cross

**97.** Consider the following statements with regard to mass vaccination programmes in a disaster-affected zone :
1. The WHO recommends that the typhoid and cholera vaccines should routinely be given in endemic areas.
2. The mass vaccination of the population against tetanus is usually unnecessary.
3. If tetanus immunization was received more than 5 years ago in a patient who has sustained an open wound, a tetanus toxoid booster is an effective preventive measure.

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# PAPER 2012 ANSWERS

1. (c) Infective endocarditis

Roth's spots are retinal hemorrhages with pale centers, classically associated with infective endocarditis. They result from immune complex deposition or septic microemboli in the retinal vessels. While Roth's spots can sometimes be reported in other conditions (e.g., severe anemia or leukemia), their classic textbook association remains with infective endocarditis. Infective endocarditis leads to various embolic phenomena and immunologic manifestations, among which Roth's spots are a hallmark finding.

2. (a) Left anterior descending artery

An acute anterior wall myocardial infarction (MI) most commonly involves the left anterior descending (LAD) artery. The LAD supplies the anterior wall and the interventricular septum. A 42-year-old smoker presenting with classical anterior wall changes (ST elevations in anterior leads on ECG) is most likely to have a blockage in this vessel. Obstruction of the LAD can lead to significant morbidity because it supplies a large portion of the left ventricle, making early intervention critical.

3. (b) It is transmitted by the bite of male sand flies

Kala-azar (visceral leishmaniasis) is caused by Leishmania donovani, and it is transmitted by female Phlebotomus sand flies, not male sand flies. The promastigote form enters the human host when an infected female sand fly bites. Post Kala-azar dermal leishmaniasis is a known complication that can appear months after treatment. Therefore, all the listed statements are correct except for the claim that male sand flies transmit the infection, making (b) the erroneous statement.

4. (d) Left atrial thrombus

Percutaneous mitral balloon valvuloplasty is generally indicated in patients with symptomatic, isolated, pliable (non-calcified) mitral stenosis. Significant symptoms (e.g., dyspnea) and favorable valve morphology (i.e., mobile leaflets with minimal calcification) are required for good outcomes. However, the presence of a left atrial thrombus is a contraindication because the procedure risks dislodging the clot, leading to systemic embolization. Hence, (d) is the exception and is not a criterion for valvuloplasty.

5. (a) Complete heart block

"Cannon" A waves occur when the right atrium contracts against a closed tricuspid valve, causing a forceful backflow and marked jugular venous pulse waves. This scenario typically arises in complete (third-degree) heart block where atrial and ventricular contractions are dissociated. Because the atria and ventricles beat independently, sometimes atrial systole coincides with ventricular systole (closed tricuspid valve), creating the pronounced "cannon" a wave. It is not characteristic of hypertrophy or valve stenosis alone.

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6. (c) A-3 B-2 C-4 D-1

Familial breast cancer is often linked to the BRCA-1 gene (A→3). Marfan's syndrome is caused by mutations in the fibrillin-1 gene (FBN-1) (B→2). Cystic fibrosis results from a defective CFTR gene (C→4). Achondroplasia is usually traced to a defect in fibroblast growth factor receptor 3 (FGFR3), but in the options provided, FGFR is listed as "1" (D→1). Hence, the correct matching is A–3, B–2, C–4, D–1, which corresponds to option (c).

7. (d) A-2 B-3 C-1 D-4

Parkinsonism is best managed symptomatically by dopamine-replacement therapy such as levodopa
(A→2). Migraine prophylaxis and acute treatment often involve ergot derivatives (e.g., ergotamine) (B→3). Motor neuron disease (such as amyotrophic lateral sclerosis) can be slowed marginally by riluzole (C→1). Multiple sclerosis

**104.** With reference to the demographic profile of India, consider the following statements :
1. The proportion of the population in the age group 0-6 declined from 16% to 13% over the period 2001-11.
2. Of all the states, 20 states have achieved replacement level fertility.
3. As per 2011 census, there has been a significant inflow of migration to many southern states.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**105.** A kind of harmful chemical substances known as phthalates are sometimes in the news. Which of the following statements is/are correct regarding them ?
1. They are extensively used in the manufacture of paints and varnishes.
2. They are used in the manufacture of toys.
3. They interfere with the development of reproductive system.
4. They are toxic to liver and thyroid glands.

Select the correct answer using the code given below:
(a) 1 only
(b) 2, 3 and 4 only
(c) 3 and 4 only
(d) 1, 2, 3 and 4

**106.** Consider the following transient physiological changes :
1. Increase in blood pressure
2. Decrease in intracranial pressure
3. Dilatation of the pupils
4. Increase in breathing rate

Which of the above changes transiently occur in a person exposed to noise pollution ?
(a) 1, 2, 3 and 4
(b) 3 and 4 only
(c) 1 and 4 only
(d) 1 and 2 only

**107.** Consider the following statements in the context of Chandrayaan 1 :
1. This moon mission included a spacecraft and a moon impact probe.
2. It made the discovery that the moon may have water.
3. It carried out 3D lunar surface mapping.
4. It placed the National tricolor on the lunar surface.

Which of the above statements regarding Chandrayan 1 are correct ?
(a) 1, 2, 3 and 4
(b) 3 and 4 only
(c) 1 and 4 only
(d) 1 and 2 only

**108.** Which one of the following kitchen practices is considered to be beneficial from the standpoint of nutrition and health?
(a) Addition of baking soda to beans and lentils at the time of cooking
(b) Cutting vegetables into small pieces half an hour before cooking
(c) Fermenting the ingredients before making the preparation as in idli or dhokla
(d) Washing the rice with good amount of water before cooking

**109.** Which of the following can help in reducing the carbon footprint ?
1. Using fly-ash based cement in building construction.
2. Using LED-based electric lamps instead of incandescent lamps.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**110.** Match List I with List II and select the correct answer using the code given below the Lists :

| | **List I (Biosphere Reserve)** | | **List II (State)** |
|---|---|---|---|
| A | Dehang-Debang | 1 | Arunachal Pradesh |

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4. As a large-scale measure, typhoid and cholera vaccines have proven to be effective public health strategy.

Which of the statements given above is/are correct ?
(a) 1, 2, 3 and 4
(b) 1, 2 and 3 only
(c) 1, 2 and 4 only
(d) 2, 3 and 4 only

**98.** Under the Integrated Child Development Scheme (ICDS), which among the following services are provided?
1. Immunization
2. Supplementary nutrition
3. Primary school education
4. Health check-up

Select the correct answer using the code given below:
(a) 1, 2 and 3 only
(b) 3 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

**99.** Consider the following health hazards :
1. Lowering of IQ in children
2. Lowering of systolic blood pressure
3. Reduced RBC survival and reduced haem biosynthesis
4. Higher rates of miscarriages, stillbirths and pre-term deliveries

Which of the above are associated with environmental lead exposure ?
(a) 1, 2, 3 and 4
(b) 1 and 2 only
(c) 1, 3 and 4 only
(d) 1, 2 and 3 only

**100.** Which of the following will be the useful control strategies to check outdoor pollution with 'fine' particulate matter?
1. Restriction on the use of two-stroke engines
2. Restriction on burning of biomass
3. Restriction of use of coal as fuel in homes
4. Active measures to control forest fires

Which of the statements given above are correct?
(a) 1, 2, 3 and 4
(b) 1 and 2 only
(c) 1, 2 and 4 only
(d) 1, 2 and 3 only

**101.** The following agents are known leukaemogens except
(a) Benzene
(b) Beryllium
(c) Ethylene oxide
(d) Ionizing radiation

**102.** Consider the following statements with regard to the PNDT (Pre-Natal Diagnostic Techniques (Regulation and Prevention of Misuse)) Act :
1. It prohibits all organizations and persons from selling and renting ultrasound or imaging machines to any institution or person unless they are registered under the Act.
2. It makes it mandatory upon a Genetic Centre, Laboratory, Ultrasound Clinic to display prominently an undertaking that they do not conduct any test or procedure for detection of sex or foetus.
3. It makes it mandatory upon every Genetic Centre, Laboratory, Ultrasound Clinic to maintain a register showing in serial order, the names and addresses of the clients who report for pre-natal counselling or diagnostic tests.
4. It makes it mandatory that only sonologists / radiologists having a PG degree or PG diploma in sonography / radiology should conduct the ultrasound or imaging studies.

Which of the above are the provisions given in the PNDT Act?
(a) 1, 2, 3 and 4
(b) 2 only
(c) 2, 3 and 4 only
(d) 1, 2 and 3 only

**103.** Who is the Chairman of the National Disaster Management Authority in India?
(a) Prime Minister of India
(b) Union Home Minister
(c) Union Health Minister
(d) Union Minister of Environment and Forests

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(c) 3 only
(d) 1, 2 and 3

**117.** Biological fixation of nitrogen most commonly occurs in which of the following crops?
(a) Pulses
(b) Cereals
(c) All tuber crops
(d) Sugarcane and beetroot

**118.** A genetically modified rice called 'golden rice' helps in combating the deficiency of
(a) Vitamin A
(b) Vitamin C
(c) Calcium
(d) Zinc

**119.** The President of India is elected by the
(a) Members of Lok Sabha only
(b) Members of both Houses of Parliament only
(c) Members of Lok Sabha and State Legislative Assemblies only
(d) Elected Members of both Houses of Parliament and State Legislative Assemblies

**120.** With reference to the labour laws of our country, which of the following statements is/are correct?
1. The services of women workers cannot be terminated during the period of their absence on account of pregnancy except for gross misconduct.
2. Any factory employing women workers, irrespective of their number in the factory, is required to provide creche facilities for their children.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

END

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(b) Measles
(c) Exanthema subitum
(d) Erythema infectiosum

**78.** Which of the following is not a feature of arthritis in acute rheumatic fever ?
(a) Elevated ASO titre
(b) Joint deformities are common sequel
(c) Dramatic response to aspirin
(d) Involvement of large joints

**79.** Approximate caloric requirements of an infant at the age of 12 months would be
(a) 500 Kcal
(b) 700 Kcal
(c) 1,000 Kcal
(d) 1,200 Kcal

**80.** The following are live attenuated vaccines except
(a) Polio Sabin vaccine
(b) Schwarz measles vaccine
(c) BCG vaccine
(d) Pertussis vaccine

**81.** Which of the following is characterised by an increase in osmotic fragility of red cells ?
(a) Thalassaemia major
(b) Iron deficiency anaemia
(c) Hereditary spherocytosis
(d) Pyridoxine deficiency

**82.** If both the parents are carriers of the beta thalassaemia gene, the chance of having a child with thalassaemia major in each pregnancy is
(a) 25%
(b) 50%
(c) 75%
(d) 100%

**83.** The severity of mitral stenosis is assessed by
(a) Character of murmur
(b) Splitting of $S_2$
(c) Loudness of $S_1$
(d) $S_2$–$O_s$ interval

**84.** Which of the following is not a characteristic feature of Kala-azar?
(a) Splenomegaly
(b) Leukocytosis
(c) Anaemia
(d) Hypoalbuminaemia

**85.** The most common cause of epistaxis in a 4-year-old boy is
(a) Chronic rhinitis
(b) Nasal polyp
(c) Foreign body
(d) Nose picking

**86.** A 5-year-old child presents with short history of purpuric rash, pain and swelling of both knee joints and pain in abdomen. The most likely diagnosis is
(a) Idiopathic thrombocytopenic purpura
(b) Kawasaki disease
(c) Henoch–Schönlein purpura
(d) Takayasu arteritis

**87.** The following vaccines can be administered subcutaneously except
(a) Measles vaccine
(b) Varicella vaccine
(c) BCG
(d) MMR vaccine

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**88.** In a normal child who weighs 15 kg, the daily fluid maintenance requirement will be approximately
(a) 1000 ml
(b) 1250 ml
(c) 1500 ml
(d) 1750 ml

**89.** Which of the following investigations would be diagnostic of Cystic fibrosis?
(a) Deficiency of the enzyme mucinase
(b) High sweat chloride content
(c) Alpha-1 aldolase deficiency
(d) Increased copper excretion in urine

disease-modifying therapy includes interferon-β1a (D→4). Thus, A–2, B–3, C–1, D–4 matches option (d).

8. (a) Tall spiky P wave

Right atrial hypertrophy (RAH) typically produces a tall, peaked P wave (sometimes called "P pulmonale") in leads II, III, and aVF on the ECG. A widened P wave is more characteristic of left atrial enlargement ("P mitrale"). Prolonged P-R interval indicates AV nodal conduction delay, while an increased P-Q segment is not commonly used as an indicator of atrial enlargement. Hence, tall spiky P waves are the classic hallmark of right atrial overload.

9. (d) Haptoglobin

In intravascular hemolysis, red cells rupture within blood vessels, freeing hemoglobin into circulation. This leads to elevated unconjugated bilirubin, elevated lactate dehydrogenase (LDH), and an increased reticulocyte count (as the bone marrow responds by producing more RBCs). Haptoglobin binds free hemoglobin, so it becomes consumed and thus decreases in intravascular hemolysis. Therefore, haptoglobin is not raised; instead, it is low.

10. (b) ST segment elevation is an integral part of LBBB

LBBB does involve QRS prolongation (>120 ms) and can be caused by coronary artery disease or cardiomyopathy. However, persistent ST segment elevation is not an integral or guaranteed feature of LBBB. ST/T changes can be secondary to altered depolarization and repolarization, but classical persistent ST elevation is not a core criterion of LBBB. Hence, option (b) is the incorrect statement.

11. (a) Gamma Amino Butyric Acid

Gamma Amino Butyric Acid (GABA) is the principal inhibitory neurotransmitter in the central nervous system, reducing neuronal excitability throughout the nervous system. In contrast, acetylcholine, dopamine (in certain pathways), and serotonin can all serve excitatory functions (though dopamine can have complex roles). GABA's role is primarily inhibitory, making it the correct choice as the one that is "except" (not an excitatory transmitter).

12. (c) Subcutaneous epinephrine

This presentation is highly suggestive of an anaphylactic reaction: sudden hypotension, bronchospasm (wheezing), and tachycardia following antibiotic administration. The first-line immediate treatment for anaphylaxis is epinephrine (adrenaline). Although intravenous fluids, corticosteroids, and bronchodilators can be supportive, epinephrine via intramuscular (or subcutaneous) route is the definitive and most urgent therapy to counteract anaphylaxis. It helps restore vascular tone and reduce airway constriction.

13. (d) Constitutional growth delay

Constitutional growth delay (CGD) is a pattern where children grow at a normal rate but remain on the lower percentiles initially and then often have a later-than-average puberty, ultimately reaching normal adult heights. While hypothyroidism, growth hormone deficiency, and chronic systemic illness are important causes of short stature, the single most common cause in otherwise healthy children is CGD. They typically have a family history of delayed growth spurts but normal adult stature.

14. (c) IV thiopental

Initial management of status epilepticus commonly uses benzodiazepines (e.g., lorazepam or diazepam), followed by antiepileptic agents such as phenytoin/fosphenytoin, valproate, levetiracetam, or phenobarbital. Clobazam (a benzodiazepine) and IV valproate are recognized options in early or established status epilepticus. IV thiopental is typically reserved for refractory status epilepticus when initial measures fail and often requires intensive monitoring because of its profound sedative effects. Therefore, it is not a routine initial drug.

15. (a) 1-3 hours

A standard unit of packed red blood cells is typically transfused over 1.5 to 3 hours in most adults. The recommendation is usually to complete transfusion within 4 hours to reduce

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the risk of bacterial overgrowth if the blood is at room temperature. However, "1-3 hours" is generally considered the optimal timeframe for most patients, provided they have no risk factors (e.g., fluid overload) requiring a slower rate. This minimizes infection risk and ensures safe correction of anemia.

16. (a) Acute lymphocytic leukaemia

Massive splenomegaly is most characteristically seen in conditions like chronic myeloid leukemia (CML), myelofibrosis (with extramedullary hematopoiesis), and hairy cell leukemia. In acute lymphocytic leukemia (ALL), although splenomegaly can occur, it is generally not massive compared with these other disorders. The extremely enlarged spleen in CML or hairy cell leukemia can extend well below the costal margin. Hence, among the listed options, acute lymphocytic leukemia typically does not manifest massive splenomegaly.

17. (b) Frontoparietal network : Face and object recognition

Face and object recognition is primarily linked to the occipitotemporal (fusiform) regions, not the frontoparietal network. The limbic network is important for memory and emotional processing. The perisylvian region (around the Sylvian fissure) is well-known for language functions (Broca's and Wernicke's areas). The prefrontal cortex is involved in executive function, attention, and behavior. Thus, labeling the frontoparietal network as responsible for face and object recognition is inaccurate.

18. (c) Painful, deep, sloughing infection of the gums from commensal organisms of the mouth

Vincent's angina (also called trench mouth or acute necrotizing ulcerative gingivitis) is a severe gum infection marked by painful ulceration, foul odor, and sloughing of gingival tissue. It results from an overgrowth of commensal oral bacteria, typically involving fusobacteria and spirochetes. It is not related to ischemic cardiac pain or post-MI angina, and it is unrelated to achalasia cardia. The term "angina" here refers to the severe throat/gum pain, not cardiac pain.

19. (d) A-1 B-2 C-3 D-4

Jugular venous pulse waveforms correspond to mechanical events in the right atrium and ventricle. The 'a' wave reflects atrial contraction (onset of atrial systole → 4). The 'x' descent is due to atrial relaxation (2). The 'v' wave represents filling of the right atrium while the tricuspid valve is closed (3). The 'y' descent occurs when the tricuspid valve opens and blood empties into the right ventricle (1). Thus, A=1, B=2, C=3, D=4.

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20. (b) A-2 B-4 C-3 D-1

Opium's respiratory depression and overdose are reversed by naloxone (A→2). Cyanide poisoning is managed with sodium thiosulphate (and other agents) (B→4). Mercury toxicity can be treated with chelating agents such as dimercapto-1-propane sulphate (DMPS) or DMSA (C→3). Diazepam overdose is reversed by flumazenil (D→1). Hence, A=2, B=4, C=3, D=1 fits option (b).

21. (d) Calcium channel blocker

In a patient with heart failure symptoms (orthopnea, pedal edema, basal crepitations) and a likely reduced ejection fraction, standard beneficial treatments include loop diuretics (e.g., furosemide) for volume overload, ACE inhibitors to reduce afterload and remodeling, and certain beta blockers (e.g., carvedilol, metoprolol) shown to improve mortality in heart failure. Many calcium channel blockers, especially the non-dihydropyridines, can depress cardiac function and are generally avoided in systolic heart failure, making them the exception here.

22. (a) Intravenous quinine

Severe falciparum malaria (as indicated by high parasitemia, jaundice, altered consciousness) typically requires urgent parenteral treatment. Although intravenous artesunate is now widely recommended where available, older regimens use intravenous quinine to rapidly lower parasite loads. Oral therapy (or through Ryle's tube) is inappropriate in severely ill, semiconscious patients. Intravenous chloroquine is not effective against many chloroquine-resistant strains of

P. falciparum. Oral primaquine is reserved for radical cure or gametocyte clearance, not for initial severe infection control.

**23.** (a) Allergic bronchopulmonary aspergillosis

Allergic bronchopulmonary aspergillosis (ABPA) is a hypersensitivity reaction to Aspergillus species in asthmatic or cystic fibrosis patients. It can present with transient ("fleeting") pulmonary infiltrates that shift from one area of the lung to another, sometimes accompanied by elevated IgE levels and episodic bronchial obstruction. Tuberculosis, Pneumocystis pneumonia, or Nocardia infections do not typically exhibit this pattern of migratory opacities in someone with known asthma.

**24.** (b) Oesophageal varices

Massive hematemesis with splenomegaly strongly suggests portal hypertension, in which blood flow through the portal venous system is impeded, commonly leading to dilated submucosal veins in the esophagus (varices). When varices rupture, they cause severe bleeding. Peptic ulcers (duodenal or gastric) typically are not associated with marked splenomegaly. Erosive mucosal disease can cause bleeding but does not usually correlate with an enlarged spleen.

**25.** (b) Argemone poisoning

Epidemic dropsy is caused by contamination of edible oils (often mustard oil) with Argemone mexicana seed oil. The toxic principle causes widespread edema, gastrointestinal disturbances, and sometimes cardiac and ocular involvement. Dhatura, organophosphorus compounds, and aluminum phosphide have different toxic profiles and do not produce the typical syndrome of epidemic dropsy, characterized by pitting edema and systemic manifestations linked to Argemone poisoning.

**26.** (c) Amphotericin B

Cryptococcal meningitis (especially in immunocompromised individuals) is most effectively treated initially with amphotericin B (often combined with flucytosine). After induction therapy, patients typically switch to a consolidation phase with high-dose fluconazole. Ketoconazole is not preferred for meningitis. Pentamidine is used in certain protozoan infections (e.g., Pneumocystis pneumonia) but is not the first-line treatment for cryptococcal infections.

**27.** (a) Lead poisoning

Lead poisoning primarily affects motor fibers, causing a motor neuropathy (classically wrist or foot drop) rather than a predominant sensory neuropathy. Diabetes mellitus, beriberi (thiamine deficiency), and chronic alcoholism are all recognized causes of peripheral nerve damage that typically present with significant sensory components (pain, paresthesias) and sometimes mixed motor-sensory involvement. Lead toxicity is more known for its motor manifestations and encephalopathy rather than sensory deficits.

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**28.** (b) Low serum chloride

Distal (type 1) renal tubular acidosis is characterized by an inability to acidify the urine in the distal nephron, leading to a normal anion gap (hyperchloremic) metabolic acidosis. The typical findings include low serum potassium and a non-anion-gap acidosis. Because of the difficulty excreting hydrogen ions, ammonium excretion is often low (not high), but crucially, serum chloride is elevated (not low) because bicarbonate is replaced by chloride. Thus "low serum chloride" is not a feature of distal RTA.

**29.** (a) Hepatitis B is the most common viral cause of cirrhosis worldwide

Globally, hepatitis B remains a leading cause of chronic liver disease and cirrhosis, especially in regions such as Asia and Africa. Chronic hepatitis C also leads to cirrhosis, but at a higher rate than 5% (so option (b) is false). Hepatitis B is transmitted via blood/body fluids, not by the fecal-oral route (c is false). While hepatitis C can lead to chronic infection, hepatitis B is more often implicated in fulminant disease globally, making (d) incorrect.

**30.** (a) Atrial septal defect

Wide, fixed splitting of S2 is a hallmark finding in atrial septal defect (ASD). The left-to-right shunt at the atrial level increases right ventricular stroke volume and delays pulmonic valve closure. This delay causes a persistent splitting that does not vary much with respiration. Ventricular septal defect and patent ductus arteriosus typically affect other components of auscultation, and coarctation of the aorta is associated with different clinical signs (e.g., blood pressure discrepancies in upper vs. lower limbs).

**31.** (a) Atopic dermatitis

Atopic dermatitis (eczema) frequently presents in infancy with intense pruritus and eczematous lesions, especially on the face and extensor surfaces in younger children. A family history of atopy (asthma, allergic rhinitis) supports this diagnosis. Characteristic features include lichenification and Dennie–Morgan folds (creases under the eyes). Allergic contact dermatitis is uncommon at this young age, and seborrheic dermatitis has a different distribution (scalp, cradle cap). Neurodermatitis is generally a localized, chronic form of lichen simplex.

**32.** (d) 3 and 4 (Itraconazole and Ketoconazole)

'Spaghetti and meatball' on KOH preparation describes Malassezia (Pityriasis versicolor). Although topical therapy is common, oral agents like itraconazole or ketoconazole are also effective for extensive or resistant cases. Terbinafine is less effective for Pityriasis versicolor (it's more for dermatophytes), and griseofulvin is also not the best choice. Itraconazole and ketoconazole are well-documented oral regimens for this superficial fungal infection.

**33.** (b) Permethrin 5% (w/w) cream

Scabies in infants and young children is best treated with topical permethrin 5% cream applied to the entire body (including the scalp in very young children) and left overnight before washing off. Permethrin 1% is generally used for head lice, not scabies. Gamma benzene hexachloride is avoided in infants because of potential neurotoxicity. Benzyl benzoate 25% can be irritating for very young skin. Permethrin 5% is both safe and effective for pediatric scabies.

**34.** (d) Organophosphorus compound

Bradycardia, hypotension, respiratory depression, excessive salivation, fasciculations, and flaccid paralysis strongly point to an organophosphorus compound poisoning, which causes cholinergic overactivity ("SLUDGE" signs) and neuromuscular dysfunction. Opioid overdose causes pinpoint pupils, severe respiratory depression, but not usually fasciculations. Barbiturates cause CNS depression without the marked cholinergic excess signs (salivation, fasciculations). Copper sulphate poisoning can produce gastrointestinal corrosion and hemolysis, but not the described cholinergic syndrome.

**35.** (b) They mask the symptoms of hypoglycaemia

Beta-blockers can blunt the adrenergic warning signs of hypoglycemia (e.g., tremor, tachycardia, anxiety), placing insulin-dependent diabetic patients at greater risk of unrecognized hypoglycemia. While beta-blockers do not directly reduce insulin efficiency, the loss of these sympathetic cues can be dangerous. Dermatitis herpetiformis is related to gluten sensitivity (celiac disease), and congestive heart failure is not a universal effect of beta-blockers (they can actually help in stable heart failure).

**36.** (a) They facilitate the absorption of dietary fats

Bile acids (produced from cholesterol in the liver) emulsify dietary fats in the small intestine, creating micelles that allow lipase to act efficiently and enhance fat absorption. While bile can help excrete certain substances (e.g., cholesterol, bilirubin), the principal recognized physiological function of bile acids is to aid in the digestion and absorption of lipids and the fat-soluble vitamins (A, D, E, K). B12 absorption primarily depends on intrinsic factor, not bile acids.

**37.** (c) Folic acid

Folic acid supplementation before conception and during early pregnancy has been conclusively shown to reduce the incidence of

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neural tube defects (e.g., spina bifida) in the developing fetus. Riboflavin (B2) and pyridoxine (B6) have important roles in metabolism, but they do not specifically prevent neural tube malformations. Cyanocobalamin (B12) is also important for neurological function, but the prime recommendation for neural tube defect prevention is adequate folic acid intake.

**38.** (c) Pulmonary thromboembolism

The classic ECG finding S1 Q3 T3 (deep S wave in lead I, Q wave and inverted T wave in lead III) is a recognized sign of acute pulmonary embolism, although not always present. A ventilation-perfusion (V/Q) scan showing multiple perfusion defects is strongly indicative of pulmonary emboli. This patient's recent stroke and likely reduced mobility may have predisposed him to venous thromboembolism. Pneumothorax, heart failure, or psychogenic breathlessness do not typically produce those combined V/Q and ECG findings.

**39.** (a) Thalassaemia

Thalassaemia is a hereditary hemoglobinopathy involving defective synthesis of globin chains, but it is not traditionally classified as an "inborn error of metabolism." Wilson's disease (a copper metabolism defect), phenylketonuria (phenylalanine hydroxylase deficiency), and galactosemia (failure to metabolize galactose) are classic metabolic disorders (errors of intermediary metabolism). Thus, thalassaemia is excluded from that specific category.

**40.** (b) Cotrimoxazole

In an HIV-positive patient with bilateral interstitial infiltrates, Pneumocystis pneumonia (PCP) is highly likely. The first-line empirical treatment for PCP is high-dose trimethoprim-sulfamethoxazole (cotrimoxazole). Penicillin is not effective for PCP. Amphotericin B is used for severe fungal infections (e.g., cryptococcal meningitis), and acyclovir treats viral infections (like herpes). Cotrimoxazole remains the initial drug of choice unless contraindicated.

**41.** (c) 1, 2 and 4

Typhus fevers are caused by Rickettsia species. Epidemic typhus (R. prowazekii) is transmitted by the human body louse, endemic (murine) typhus (R. typhi) by fleas, and scrub typhus (O. tsutsugamushi) by mites. Sand flies are generally vectors for other illnesses (e.g., leishmaniasis), not typically the classic typhus group. Hence, mites (1), human body louse (2), and fleas (4) are responsible for transmitting the typhus fevers.

**42.** (c) Peripheral neuritis

Isoniazid (INH), a first-line antitubercular drug, can cause peripheral neuritis by interfering with pyridoxine (vitamin B6) metabolism, leading to a deficiency that manifests as neuropathy. Supplementation with pyridoxine helps prevent this complication. Diarrhea and renal toxicity (acute tubular necrosis) are not typical isoniazid side effects, while "hypertrophy" is non-specific. Peripheral neuritis remains the most commonly referenced adverse effect of INH therapy.

**43.** (d) Direct Coombs' test is positive

Hemolytic uremic syndrome (HUS) is a microangiopathic hemolytic anemia characterized by fragmented RBCs (schistocytes), thrombocytopenia, and acute renal failure. The direct antiglobulin (Coombs) test is typically negative in HUS (since it is not an autoimmune hemolysis). Thus, (d) is not true. HUS often follows certain infections (e.g., E. coli O157:H7) and involves mechanical RBC destruction in small vessels, thrombocytopenia, and kidney dysfunction.

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**44.** (b) Generalised tender lymphadenopathy

Secondary syphilis typically presents with widespread mucocutaneous lesions (including the palms and soles), systemic symptoms (like mild fever, malaise, weight loss), and characteristic mucosal changes (painless erosions or "snail-track" ulcers). Lymphadenopathy is also common, but it is generally painless or only mildly tender. Markedly tender lymphadenopathy is not typical of secondary syphilis, so "generalised tender lymphadenopathy" is the exception (i.e., not typically seen).

**45.** (a) Cerebral malaria

There is no mandatory requirement that the label show "recommendations made by medical professionals." Hence, 1, 2, and 4 are required, while 3 is not.

**94.** (c) A-4 B-2 C-1 D-3

In this matching scheme:

1. Cuttack is associated with textiles (A→4).
2. Indore has a notable glass industry (B→2).
3. Kolhapur is linked with paper production (C→1).
4. Ramagundam has a major fertilizer plant (D→3).

Hence, the correct code is A=4, B=2, C=1, D=3.

**95.** (a) Carbon monoxide

Photochemical smog primarily arises from volatile organic compounds (VOCs) and oxides of nitrogen ($NO_x$) in the presence of sunlight (UV) and atmospheric oxygen ($O_2$). While carbon monoxide can contribute to overall air pollution and ozone formation, it is not an essential reactant in creating classical photochemical smog (the key players being $NO_x$, hydrocarbons, sunlight, and $O_2$).

**96.** (b) The State Government

Although the central government and other agencies (like armed forces or Red Cross) may assist, the primary responsibility for on-ground relief and rehabilitation during disasters in India rests with the state government machinery. They coordinate rescue, medical care, and distribution of resources at the district/local levels, with central support as required.

**97.** (b) 1, 2 and 3 only

The WHO may recommend targeted cholera/typhoid immunization in endemic or high-risk settings during disasters, but mass cholera or typhoid vaccination for the entire population is often not universally effective or routinely done. Tetanus immunization booster is indeed important for those with wounds if their last dose was over 5 years ago. Statement (4) is overly broad; large-scale routine vaccination with typhoid/cholera in all disaster zones is not always proven or recommended. Hence, 1, 2, and 3 are correct.

**98.** (c) 1, 2 and 4 only

ICDS includes several core services delivered via Anganwadi centers: immunization, supplementary nutrition, health check-ups, and pre-school (early childhood) education—not "primary school education." Primary schooling is typically under the formal school system. Thus, (3) is not correct in this specific context, and the scheme's standard components are 1, 2, and 4.

**99.** (c) 1, 3 and 4 only

Lead exposure is well-known to cause neurotoxicity (lowered IQ, behavioral issues), hematologic effects (interfering with heme synthesis and reducing RBC lifespan), and adverse pregnancy outcomes (miscarriages, stillbirths). Conversely, lead is more commonly linked with increased blood pressure rather than a lowering of systolic BP. Thus, statements 1, 3, and 4 align with lead toxicity, while 2 does not.

**100.** (a) 1, 2, 3 and 4

All listed measures can help reduce "fine" particulate ($PM_{2.5}$) emissions. Two-stroke engines, biomass burning, and domestic coal use are major contributors to urban and rural air pollution, each generating significant amounts of soot and PM. Active prevention and control of forest fires also cut down huge episodic PM loads. Taken together, restricting or improving these practices is crucial for lowering ambient fine-particulate levels and improving air quality.

**101.** (b) Beryllium

Benzene, ethylene oxide, and ionizing radiation are well-known risk factors for leukemia. Benzene is famously linked with acute myeloid leukemia, ethylene oxide has documented carcinogenic (including leukaemogenic) properties, and ionizing radiation raises the incidence of various blood malignancies. Beryllium is more notorious for causing chronic lung disease (berylliosis) and possible lung

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**53.** (a) 1 and 2

Doppler echocardiography is the definitive, noninvasive method to assess mitral valve area and stenosis severity. In a pregnant woman with significant symptomatic mitral stenosis (especially if moderate or severe), percutaneous balloon mitral valvuloplasty is often the preferred interventional treatment if the valve morphology is favorable. Oral anticoagulants are indicated only if she has atrial fibrillation or left atrial thrombus. "Anti-failure measures only" may be insufficient if the stenosis is severe.

**54.** (d) Sarcoidosis

Alopecia areata, tinea capitis, and secondary syphilis typically produce non-scarring (reversible) hair loss. Alopecia areata is an autoimmune process; tinea capitis is a fungal infection of the scalp; and syphilis can manifest with a "moth-eaten" alopecia. Sarcoidosis, however, more often causes granulomatous involvement that leads to destruction of hair follicles and scarring alopecia in affected areas. Thus, sarcoidosis is the exception among these options.

**55.** (a) Cardiac muscle damage

Anthracyclines (e.g., doxorubicin, daunorubicin) are well known for their dose-related cardiotoxicity, which can lead to dilated cardiomyopathy and congestive heart failure. Peripheral neuropathy is more associated with agents like vincristine; hemorrhagic cystitis is a concern with cyclophosphamide; and platinum drugs (like cisplatin) are more notorious for renal toxicity. Hence, the hallmark toxicity unique to anthracyclines is cardiac muscle damage.

**56.** (a) Cytokines

Cellular immunity (T-cell mediated) heavily depends on cytokines—proteins secreted by cells (like interleukins, interferons) that modulate immune responses. Immunoglobulins (or gamma globulins) predominantly function in the humoral arm of immunity (B-cell derived antibodies). Prostaglandins are inflammatory mediators but are not the direct modulators of T-cell-driven cellular immunity. Cytokines, however, regulate T-cell growth, differentiation, and activity, making them central to cell-mediated immune functions.

**57.** (c) Dysthymia

Dysthymia (now often termed Persistent Depressive Disorder) is a mood disorder characterized by a chronically depressed mood that lasts for at least two years in adults (one year in children/adolescents). It is less severe than major depressive disorder but is more prolonged and persistent. Unipolar depression is a broader term for major depressive episodes without mania, bipolar depression involves episodes of mania or hypomania, and major depressive disorder typically has more pronounced symptoms but shorter episodes compared to dysthymia.

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**58.** (c) 1, 2 and 3

Acanthosis nigricans is characterized by velvety, hyperpigmented skin plaques, often in body folds (neck, axillae). It is strongly linked to insulin resistance states (obesity, type 2 diabetes) and can also be a paraneoplastic phenomenon, especially with gastric adenocarcinoma. Haemochromatosis is not commonly associated with acanthosis nigricans. Therefore, the conditions correctly associated are 1 (gastric carcinoma), 2 (obesity), and 3 (insulin resistance).

**59.** (d) Lymphadenitis

Reiter's syndrome, now often called reactive arthritis, is classically described as a triad of conjunctivitis (or uveitis), urethritis, and arthritis. It is a seronegative spondyloarthropathy, meaning rheumatoid factor is typically negative. Lymphadenitis is not part of the classic Reiter's syndrome triad. Hence, (d) is the exception among these listed clinical components.

**60.** (d) Rheumatoid arthritis

Classical deformities in the hands and wrists are hallmarks of long-standing rheumatoid arthritis (RA). The swan-neck (hyperextension of the PIP joint and flexion at the DIP), boutonniere (flexion of the PIP with hyperextension at the DIP), and a Z-thumb deformity are recognized

Plasmodium falciparum infections can lead to severe complications. Among them, cerebral malaria is generally regarded as the most dire, presenting with seizures, coma, and high mortality if untreated. Although acute pulmonary edema, algid malaria (shock state), and metabolic acidosis are also serious, cerebral malaria (infection in the brain's small vessels) is often identified as the gravest complication because of the high risk of permanent neurological damage or death.

**46.** (a) Ethambutol

Isoniazid, rifampicin, and pyrazinamide are well-known for their potential to cause hepatic injury, making liver function monitoring important during treatment. Ethambutol does not typically cause hepatotoxicity; its most recognized adverse effect is optic neuritis (manifesting as altered color vision or reduced visual acuity). Therefore, among the first-line antitubercular agents, ethambutol stands out as not being significantly hepatotoxic.

**47.** (d) 1, 2 and 3

Mother-to-child transmission of HIV can happen in utero, but it predominantly occurs during labor and delivery (the perinatal period). A higher maternal viral load is associated with an increased risk of passing the virus to the newborn. Additionally, in resource-limited settings, breastfeeding by an HIV-positive mother remains a recognized route of transmission. Therefore, all three statements are correct.

**48.** (c) Intracerebral haemorrhage

A sudden, severe "bursting" headache with rapid neurological deterioration often indicates a hemorrhagic stroke. While subarachnoid hemorrhage is classically described as a "thunderclap" headache, if that option is not given, intracerebral hemorrhage is the likely cause of an acute severe headache with altered sensorium. Meningitis and encephalitis typically develop more gradually, and a brain tumor usually has a more protracted presentation.

**49.** (b) Cefazolin

Cephalosporins are categorized by "generations" based on antimicrobial spectrum. Cefazolin is a classic first-generation cephalosporin. Cefaclor and cefoxitin belong to the second generation, whereas cefepime is a fourth-generation agent. First-generation cephalosporins (e.g., cefazolin, cephalexin) have good activity against many Gram-positive bacteria and some Gram-negative organisms, making them suitable for perioperative prophylaxis and certain soft tissue infections.

**50.** (a) Fluconazole

Febrile neutropenia in immunocompromised patients often mandates broad-spectrum antibacterial and antifungal coverage. Fluconazole is commonly used prophylactically (and sometimes as an initial empirical antifungal) against Candida species in high-risk neutropenic patients. While itraconazole or voriconazole may be chosen if there is concern for molds (like Aspergillus), fluconazole remains a standard option in many protocols for febrile neutropenia prophylaxis or early therapy. Flucytosine is narrower and typically combined with amphotericin B for certain yeast infections.

**51.** (c) Colchicine

Familial Mediterranean fever is an autosomal recessive autoinflammatory disorder that causes recurrent fevers and painful serositis. Colchicine is the cornerstone of prophylactic therapy. It helps reduce the frequency and severity of attacks, and importantly, it lowers the risk of secondary amyloidosis. Doxycycline is an antibiotic, hydroxychloroquine is used in rheumatoid arthritis and lupus, and iododuxorubicin is not relevant to this condition.

**52.** (a) Right ventricular infarction

Inferior wall MIs, often due to occlusion of the right coronary artery, can extend to the right ventricle in about one-third of cases (especially if the lesion is proximal). Right ventricular involvement presents with hypotension, clear lung fields, and elevated jugular venous pressure. Excluding right ventricular infarction is crucial because its management (particularly IV fluids to maintain preload) differs from standard left-sided MI protocols.

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**68.** (c) Hypertrophic cardiomyopathy

A systolic murmur that becomes louder during Valsalva (which decreases venous return and left ventricular end-diastolic volume) is characteristic of hypertrophic obstructive cardiomyopathy (HOCM). The reduced LV volume accentuates the outflow tract obstruction, thus increasing the murmur. Valvular aortic stenosis does not typically intensify with Valsalva in the same way. A heaving apex can also be found in HOCM due to the vigorous LV contraction.

**69.** (d) Ursodeoxycholic acid

Ursodeoxycholic acid (UDCA) is the mainstay therapy for primary biliary cholangitis (previously called primary biliary cirrhosis). UDCA helps slow disease progression and improve liver biochemistries. Corticosteroids, interferon, or D-penicillamine are not the standard long-term treatments. UDCA can delay the need for transplantation and is well-established for improving outcomes in this autoimmune cholestatic liver disease.

**70.** (b) The disease is usually localized to the anterior segment of the upper lobe

Reactivation (post-primary) TB usually affects the posterior segment of the upper lobe (or sometimes the superior segment of the lower lobe), not the anterior segment. Reactivation TB often cavitates and can spread via bronchogenic dissemination ("satellite lesions"). In severe, untreated cases, there is a substantial mortality risk within months. Thus, statement (b) is incorrect (the "except") because it specifies the anterior segment, whereas post-primary TB classically targets the apex/posterior upper-lobe segments.

**71.** (a) 0.9 – 1.1 g/dL

Human breast milk contains relatively low protein compared to cow's milk but is highly bioavailable and specifically suited for infant needs. On average, it has about 1 g/dL of protein (or roughly 0.8–1.2 g/dL depending on stage of lactation). This is adequate for growth and immune support in human infants. Options such as 2–3 g/dL or higher would exceed typical human breast milk protein levels.

**72.** (c) Gross haematuria

Pediatric nephrotic syndrome is characterized by heavy proteinuria, hypoalbuminemia, edema, and hyperlipidemia. Although microscopic hematuria can sometimes be seen, gross hematuria is not a usual hallmark of nephrotic syndrome. Thus, among the classic hallmarks listed, (c) is the exception.

**73.** (d) Seizures

Sydenham's chorea (part of rheumatic fever) involves rapid, purposeless movements, muscle hypotonia, emotional lability, and "milkmaid's grip." Speech can become irregular and difficult to understand. Seizures are not a characteristic feature of Sydenham's chorea, differentiating it from other neurological conditions that may present with involuntary movements plus seizures.

**74.** (d) 450 nm

Neonatal phototherapy to reduce bilirubin levels is most effective in the blue-light spectrum around 450 nm. This wavelength converts bilirubin into more water-soluble isomers that can be excreted without conjugation. UV wavelengths in the 150–250 nm range are not used for neonatal jaundice management and can be harmful. The therapeutic window lies in the blue region of visible light (approximately 430–490 nm), with about 450 nm being the optimal peak.

**75.** (c) Achondroplasia

Phenylketonuria, galactosemia, and Wilson's disease are classically autosomal recessive. Achondroplasia, however, is autosomal dominant, often caused by a gain-of-function mutation in FGFR3. Children inheriting even one defective allele typically manifest the phenotype. Hence, (c) is not autosomal recessive but autosomal dominant.

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**76.** (d) Prednisolone

Minimal change nephrotic syndrome in children usually responds dramatically to corticosteroids. First-line therapy for inducing remission is daily prednisolone over several weeks. Furosemide

may help control edema symptomatically, but it does not induce remission. Cyclophosphamide can be considered for frequently relapsing or steroid-dependent cases, and levamisole is an alternative steroid-sparing agent. However, for initial remission induction, prednisolone remains the gold standard.

**77.** (b) Measles

Subacute sclerosing panencephalitis (SSPE) is a rare but fatal progressive neurologic disorder that develops years after an initial measles virus infection (usually acquired in early childhood). It results from persistent mutant measles virus in the central nervous system. Mumps, roseola (exanthema subitum), and erythema infectiosum (parvovirus B19) are not linked to SSPE.

**78.** (b) Joint deformities are common sequel

Acute rheumatic fever typically involves migratory polyarthritis affecting large joints (knees, ankles, elbows, wrists). An elevated ASO (anti-streptolysin O) titer helps confirm recent Streptococcus infection. The inflammation is usually very responsive to salicylates (aspirin). However, persistent or erosive joint deformities are not characteristic of rheumatic fever; the arthritic changes generally resolve without lasting damage.

**79.** (c) 1,000 Kcal

By around 1 year of age, average daily energy requirements are about 1,000 kcal for a typically developing infant. Younger infants need fewer total calories, though more per kg body weight. Caloric needs increase with age, but 1,200 kcal at this age would generally exceed the typical recommendation. Five hundred or seven hundred would likely be too low for a 12-month-old child's nutritional demands.

**80.** (d) Pertussis vaccine

Live attenuated vaccines contain weakened forms of the pathogen that can induce immunity without causing the full disease in healthy individuals. Sabin oral polio vaccine, measles (Schwarz strain), and BCG (for tuberculosis) are all classic live attenuated vaccines. The traditional pertussis vaccine (whole cell or acellular) is not live; it is inactivated or subunit-based, thus (d) is the correct "except."

**81.** (c) Hereditary spherocytosis

Hereditary spherocytosis arises from defects in red cell membrane proteins (e.g., spectrin), producing RBCs that are spherical rather than biconcave. These spherocytes demonstrate increased osmotic fragility (they lyse more readily in hypotonic solutions). Thalassemias, iron deficiency anemia, and pyridoxine deficiency (which affects heme synthesis) do not typically cause this marked increase in osmotic fragility.

**82.** (a) 25%

Beta thalassaemia major follows autosomal recessive inheritance. If both parents are carriers (i.e., each has one mutated beta globin gene), then for every pregnancy there is a 25% chance the child will inherit both mutated copies (thalassaemia major), a 50% chance the child will be a carrier, and a 25% chance of inheriting two normal genes. Thus, the risk of having a child with thalassaemia major is 25%.

**83.** (d) $S_2$–$O_s$ interval

In mitral stenosis (MS), the time interval between the second heart sound ($S_2$) and the opening snap ($O_s$) of the stenotic mitral valve correlates with severity. A shorter $S_2$–$O_s$ interval indicates a higher left atrial pressure and more severe stenosis. While the murmur's character and the loudness of $S_1$ provide clinical clues, the key objective bedside indicator for MS severity is the $S_2$–$O_s$ interval.

**84.** (b) Leukocytosis

Kala-azar (visceral leishmaniasis) commonly presents with chronic fever, marked splenomegaly, anemia, and hypoproteinemia/hypoalbuminemia. Leukopenia (low white cell count) or pancytopenia is typical rather than leukocytosis. Hence, "leukocytosis" is not a characteristic feature of Kala-azar.

**85.** (d) Nose picking

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In young children, the anterior portion of the nasal septum (Kiesselbach's area) is richly vascular and easily traumatized. Habitual nose-picking can abrade these vessels, causing nosebleeds (epistaxis). While other causes (like foreign body or chronic rhinitis) can occur, simple digital trauma remains the most frequent culprit for epistaxis in early childhood.

**86.** (c) Henoch–Schönlein purpura

Henoch–Schönlein purpura (HSP) is characterized by a palpable purpura (often on buttocks and lower extremities), arthralgia or arthritis (commonly knees/ankles), and abdominal pain (sometimes with GI bleeding). It typically affects young children. Idiopathic thrombocytopenic purpura (ITP) involves low platelets but usually lacks the joint and abdominal involvement seen in HSP. Kawasaki disease and Takayasu arteritis present with different clinical profiles.

**87.** (c) BCG

Measles, varicella, and MMR (measles–mumps–rubella) vaccines are generally given subcutaneously. BCG (Bacillus Calmette–Guérin) is administered intradermally (typically on the left upper arm) for tuberculosis prophylaxis. Hence, BCG is the exception among these listed options.

**88.** (b) 1250 ml

A commonly used formula for daily maintenance fluids in children is:

1. 100 ml/kg for the first 10 kg
2. 50 ml/kg for the next 10 kg
3 20 ml/kg for any weight above 20 kg

For a 15 kg child:

1. First 10 kg = 10 × 100 ml = 1000 ml
2. Remaining 5 kg = 5 × 50 ml = 250 ml

Total = 1250 ml/day.

**89.** (b) High sweat chloride content

Cystic fibrosis typically involves defective CFTR channels, leading to elevated sweat chloride levels. The sweat test (showing sweat chloride 60 mmol/L) is the classic diagnostic investigation. Mucinase deficiency, alpha-1 aldolase deficiency, and abnormal copper excretion are unrelated to CF (the latter is associated with Wilson's disease).

**90.** (c) Thalassaemia

Severe microcytic anemia with high output cardiac failure and splenomegaly beginning in early infancy is highly suggestive of beta thalassaemia major. Peripheral blood smears often show microcytosis, anisopoikilocytosis, and nucleated RBCs (normoblasts). Iron deficiency anemia usually presents a bit later and without such severe hemolysis and splenomegaly. Sickle cell disease typically shows sickle-shaped RBCs, and sideroblastic anemia is much less common in a 6-month-old presenting this way.

**91.** (d) 1, 2 and 3

The Total Sanitation Campaign (now evolved into the Swachh Bharat Mission in India) was indeed district-based, with large-scale implementation across numerous rural districts, including components for school sanitation and hygiene. It aimed to achieve universal sanitation coverage, especially in rural areas. All three statements correctly describe key features of the program.

**92.** (a) Lead oxide

Burning biomass fuels (wood, dung, crop residues) or coal indoors releases carbon monoxide (CO), particulate matter (including polyaromatic hydrocarbons such as benzopyrenes), and sulfur oxides (especially if the coal is high in sulfur). However, lead oxide is not typically generated in significant amounts by burning standard biomass or coal used for cooking. Lead compounds arise chiefly from leaded gasoline or industrial processes involving lead, not normal domestic solid-fuel combustion.

**93.** (c) 1, 2 and 4 only

Indian packaging and labelling regulations require listing all ingredients (including additives), providing basic nutritional facts (calories, protein, etc.), and specifying vegetarian or non-vegetarian status via color-coded logos.

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patterns caused by chronic synovitis and ligamentous changes. Baker's cysts (popliteal cysts) also frequently accompany RA as an outpouching of the joint capsule. Gout, psoriatic arthritis, and reactive arthritis have different typical presentations.

**61.** (c) Subcutaneous nodules are more frequent in seronegative patients

Rheumatoid arthritis (RA) can involve the cricoarytenoid joint in long-standing disease, and RA patients may show associations with HLA-DR4 (especially seropositive cases). Subcutaneous nodules (rheumatoid nodules) actually occur more commonly in seropositive (RF-positive) patients, not seronegative. RA may also lead to extrapulmonary complications, including pneumonitis and, in rare cases, bowel involvement. Hence, (c) is the false statement ("true except").

**62.** (c) 30 mg/kg per day

For chloroquine-resistant Plasmodium falciparum malaria, oral quinine sulfate is typically given in a dose of about 30 mg/kg/day (divided into three doses) for 7 days, often combined with doxycycline or clindamycin. This regimen ensures adequate blood levels to combat resistant parasites. Lower doses (10 or 20 mg/kg/day) may be insufficient for severe resistance, while 50 mg/kg/day would generally exceed recommended safe dosages and could increase toxicity risks.

**63.** (a) Hypothyroidism

Conditions that cause sympathetic overactivity or abrupt metabolic changes can mimic anxiety or panic attacks. Pheochromocytoma (episodic catecholamine release), hypoglycemia (adrenaline surge), and alcohol withdrawal (tremors, palpitations, anxiety) can closely resemble clinical anxiety. In contrast, hypothyroidism is more often associated with fatigue, lethargy, weight gain, and depressive features rather than anxiety. Thus, among the choices, hypothyroidism is the one that does not typically mimic an anxiety disorder.

**64.** (d) It may be associated with diabetes insipidus

Celiac sprue (celiac disease) is a gluten-sensitive enteropathy primarily affecting the small intestine. It is confirmed by small-intestinal biopsy (showing villous atrophy) and can be complicated by an increased risk of certain lymphomas. Associated autoimmune conditions often include type 1 diabetes mellitus or thyroid disease, not diabetes insipidus. Hence, "it may be associated with diabetes insipidus" is incorrect among these typical hallmarks.

**65.** (b) Cardiovascular syphilis often leads to dissecting aneurysm of the aorta

Treponema pallidum is the causative agent of syphilis. In primary syphilis, a chancre often appears with nearby painless lymphadenopathy. The fluorescent treponemal antibody absorption (FTA-ABS) test is indeed highly specific. However, cardiovascular syphilis typically causes a saccular or fusiform aneurysm of the ascending aorta rather than a classic "dissecting" aneurysm. Hence, (b) is incorrect as stated ("often leads to dissecting aneurysm").

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**66.** (c) Vitamin A deficiency

Vitamin A deficiency is a leading cause of preventable childhood blindness, especially in developing countries. It can progress from night blindness (nyctalopia) to xerophthalmia and keratomalacia, causing irreversible corneal damage. While trachoma has historically been significant, improved hygiene and public health measures have reduced its incidence in many areas. Traumatic cataract and recurrent conjunctivitis are not the principal preventable causes of blindness in children compared to vitamin A deficiency.

**67.** (b) 1, 2 and 3

In isolated mitral stenosis, the main obstruction is between the left atrium and left ventricle, so the LV diastolic pressure typically remains normal (1). In moderate MS, at rest, cardiac output can still be near normal (2). Progressive MS can lead to severe pulmonary hypertension and right heart strain, causing functional tricuspid regurgitation (3). However, the left ventricular ejection fraction is usually not markedly reduced in isolated MS (4 is false).

cancer rather than leukemia, so it is the odd one out in this group.

**102.** (d) 1, 2 and 3 only

The PCPNDT Act (Pre-Conception & Pre-Natal Diagnostic Techniques Act) strictly regulates the sale and use of ultrasound machines, requires centers to display signs stating no sex-determination tests are done, and mandates proper record-keeping with client information. However, the law does not insist exclusively on a postgraduate degree in radiology/sonology; it allows recognized medical practitioners with prescribed training to perform scans. Hence statements 1, 2, and 3 are correct PNDT provisions, while 4 is too restrictive.

**103.** (a) Prime Minister of India

Under the Disaster Management Act, the National Disaster Management Authority (NDMA) is the apex body for disaster management in India, and by law, the Prime Minister of India serves as its Chairperson. The NDMA coordinates planning, response, and mitigation strategies across the nation, assisted by other ministries and authorities. While the Home Ministry and other departments play key roles, the final responsibility and leadership rest with the Prime Minister.

**104.** (d) 1, 2 and 3

India's 2011 census data showed a reduced proportion of 0–6-year-olds compared with earlier years (from roughly 16% down to near 13%), indicating falling birth rates. Additionally, by the second decade of the 2000s, many Indian states had reached or approached the "replacement-level" fertility rate (around 2.1). Migration patterns also include movement into certain southern states with better job opportunities and development. Thus all three statements are broadly accurate.

**105.** (d) 1, 2, 3 and 4

Phthalates are plasticizers widely used to make plastics more flexible and are indeed found in products like paints, varnishes, toys, and many household items. They are recognized endocrine disruptors, interfering with reproductive development, and can also be hepatotoxic (toxic to the liver) and potentially affect thyroid function. Because of these health risks, there is growing regulatory scrutiny worldwide to limit phthalates in children's products and food-contact materials.

**106.** (b) 3 and 4 only

Short bursts of excessive noise can provoke a startle or stress response, often causing pupil dilation and faster breathing (hyperventilation). Blood pressure changes can be more variable or sustained rather than always a brief, uniform rise. There is no classic transient "decrease" in intracranial pressure from noise exposure. Hence, among the listed acute physiological effects, pupil dilation (3) and an increase in breathing rate (4) are most reliably noted.

**107.** (a) 1, 2, 3 and 4

Launched by ISRO in 2008, Chandrayaan-1 featured an orbiter and a Moon Impact Probe (MIP) carrying the Indian flag, effectively placing the tricolor on lunar soil. Its sensors detected signatures suggesting water molecules on the lunar surface. Additionally, it performed high-resolution 3D imaging (Terrain Mapping Camera) for lunar mapping. All four statements accurately reflect the achievements and components of Chandrayaan-1.

**108.** (c) Fermenting the ingredients before making the preparation as in idli or dhokla

Fermentation increases the bioavailability of nutrients and can boost certain vitamins (like some B vitamins). Idli, dhokla, and similar fermented foods thus provide improved nutritional benefits and easier digestibility. Adding baking soda can destroy some vitamins, while cutting vegetables too early can lead to nutrient loss through oxidation. Excessive washing of grains can remove water-soluble vitamins and minerals. Hence, (c) fermentation is the most beneficial practice.

**109.** (c) Both 1 and 2

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**38.** A 44-year-old man presents to the hospital emergency with sudden onset pain in the epigastrium and three episodes of vomiting in the last two hours. His last vomitus was slightly brownish in colour. He is a known case of ankylosing spondylitis requiring regular medication for back pain. Which one of the following tests would best help diagnose the patient ?
(a) Upper GI endoscopy
(b) Ultrasound abdomen
(c) Ryle's tube aspiration
(d) H. pylori serology

**39.** For the prevention of Yellow fever a single vaccination with 17 D non-pathogenic strain of virus gives full protection to the individual for at least
(a) 10 years
(b) 12 years
(c) 15 years
(d) 18 years

**40.** Which of the following metabolic disorders is associated with hypokalaemia ?
(a) Metabolic acidosis
(b) Metabolic alkalosis
(c) Respiratory acidosis
(d) Mixed acidosis

**41.** Besides Zidovudine and Lamivudine, which of the following drugs is a reverse transcriptase inhibitor used in the treatment of HIV infection ?
(a) Saquinavir
(b) Indinavir
(c) Abacavir
(d) Ritonavir

**42.** A 70-year-old patient complains of recent change in bowel habits. His stool examination is positive for occult blood and he has anaemia. Which one of the following tumour markers would be appropriate to test in him ?
(a) CA-125
(b) Prostate specific antigen
(c) Carcino Embryonic Antigen
(d) Neuron-specific enolase

**43.** Which of the following statements is not true in the cases of infective endocarditis caused by HACEK organisms ?
(a) The clinical course of HACEK endocarditis tends to be acute and fulminant.
(b) Cultures of blood from patients with suspect HACEK endocarditis may require up to 30 days to be positive.
(c) Embolisation is common and occurs in around 50% cases of HACEK endocarditis.
(d) Valvular vegetations are seen in up to 85% of patients.

**44.** In leptospirosis, the following clinical features are seen except :
(a) Jaundice which may be intense
(b) Haemorrhage
(c) Hepatomegaly
(d) Massive splenomegaly

**45.** The following pathological features are associated with Plasmodium falciparum except :
(a) Cytoadherence
(b) Sequestration
(c) Rosetting
(d) Tissue phase

**46.** Which of the human intestinal parasitic nematodes does not infest the small bowel ?
(a) Ascaris lumbricoides
(b) Necator americanus
(c) Strongyloides stercoralis
(d) Trichuris trichiura

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**47.** Lymphatic filariasis is not caused by
(a) Brugia malayi
(b) Brugia timori
(c) Loa loa
(d) Wuchereria bancrofti

**48.** Giardiasis may result in the following except:
(a) Ill health
(b) Diarrhoea
(c) Steatorrhoea
(d) Gastrointestinal bleeding

cause of blindness and immune dysfunction in children in many developing countries.

**119.** (d) Elected Members of both Houses of Parliament and State Legislative Assemblies

Under the Indian Constitution, the President is elected by an electoral college consisting of the elected members of Lok Sabha, Rajya Sabha, and all State (and certain Union Territory) Legislative Assemblies. Neither nominated members of Parliament nor members of Legislative Councils (in states having a bicameral legislature) vote in the Presidential election.

**120.** (a) 1 only

Indian maternity protections prevent the dismissal of a woman employee during her maternity leave period, except for proven gross misconduct, making statement (1) correct. However, creche facilities under the Factories Act, 1948 (and subsequent amendments) are mandated only if a minimum number (often 30) of women workers are employed. The statement says "irrespective of their number," which is incorrect. Therefore, (2) is not universally true, leaving only (1) correct.

END

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**19.** Consider the following categories of patients :
1. Young woman
2. Pregnant woman
3. Elderly woman
4. Post-renal transplant woman

Which of the above warrant active treatment for asymptomatic bacteriuria ?
(a) 1 and 2
(b) 3 and 4
(c) 1 and 3
(d) 2 and 4

**20.** Consider the following :
1. Diabetes mellitus and thallium poisoning
2. Guillain-Barré syndrome and Amyloidosis
3. Porphyria and Diabetes mellitus
4. Steele-Richardson-Olszewski syndrome and Amyotrophic lateral sclerosis

(a) 1 and 3 only
(b) 2 and 3 only
(c) 1, 3 and 4
(d) 1, 2, 3 and 4

**21.** A 56-year-old diabetic male patient who underwent a CABG for triple vessel disease is brought to the emergency with sudden-onset inability to speak since the last two hours. He can understand what is being said to him but cannot speak. His BP is 200/110 mmHg. The emergency CT scan of the head is normal. The next step in the management would be
(a) Wait and watch
(b) Administer intravenous tPA
(c) Control blood pressure
(d) Administer a tablet of baby aspirin

**22.** A 37-year-old woman presents to her physician with the complaint of difficulty in reading and fatigue. She reports having had pins and needles feeling in her left arm several months ago that resolved without treatment. On examination, she has visual field deficits and mild hyperreflexia. The MRI examination confirms the suspected diagnosis. Which of the following is the underlying mechanism responsible for the patient's disease ?
(a) Antibodies to acetylcholine receptors
(b) Axonal degeneration
(c) Demyelination of neurons
(d) Posterior column degeneration

**23.** The following are the myeloproliferative disorders except :
(a) Polycythemia vera
(b) Essential thrombocytosis
(c) Chronic myeloid leukaemia
(d) Hairy cell leukaemia

**24.** An orally active anticoagulant under development with an advantage of not requiring the monitoring of anticoagulant effect is
(a) Fondaparinux
(b) Ximelagatran
(c) Snake venom derivative
(d) Ancrod

**25.** Which of the following is not true about hereditary spherocytosis ?
(a) Splenomegaly
(b) Increased RBC life span
(c) Pigment gall stones
(d) Effective splenectomy

**26.** In a patient of anaemia, the most convenient test for assessment of iron status is
(a) Transferrin
(b) Serum iron
(c) Haemoglobin
(d) Serum ferritin

**27.** The parents of a 13-month-old boy are contacted by a local social agency because the day care reported them for suspected child abuse based on too many bruises. The parents deny the abuse and promptly arrange to have their child seen by a medical specialist. The child has multiple large bruises on his legs, anus, and buttocks. No skin abrasions and no pattern marks are seen. PTT is prolonged and PT and bleeding time are normal. Which of the following is the most probable diagnosis?
(a) Acute myelogenous leukaemia
(b) Disseminated intravascular coagulation
(c) Vitamin K deficiency
(d) Von Willebrand disease

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**8.** The presence of multiple cavities in the lung with haematuria is suggestive of
(a) Wegener's granulomatosis
(b) Tuberculosis
(c) Renal cell carcinoma
(d) SLE

**9.** Zollinger-Ellison syndrome is characterised by the following except :
(a) Profound gastric hypersecretion
(b) Large diarrhoea with occasional steatorrhoea
(c) Hypocalcaemia
(d) Hypergastrinaemia

**10.** The presence of the Kayser-Fleischer ring in cornea is diagnostic of
(a) Alcoholic cirrhosis
(b) Primary biliary cirrhosis
(c) Wilson's disease
(d) Crigler-Najjar syndrome

**11.** A 30-year-old woman complains of suprasternal dysphagia only for solids. She also has a long-standing untreated menorrhagia leading to iron deficiency anaemia. What is the most probable cause for her dysphagia ?
(a) Pharyngeal pouch
(b) Carcinoma oesophagus
(c) Dysphagia lusoria
(d) Patterson-Kelly syndrome

**12.** Isolated conjugated hyperbilirubinemia is seen in the following conditions except :
(a) Haemolysis
(b) Gilbert's syndrome
(c) Crigler-Najjar syndrome
(d) Dubin-Johnson syndrome

**13.** The most accurate measure of Glomerular Filtration Rate (GFR) can be obtained by
(a) Creatinine clearance
(b) Calculated urea clearance
(c) Simultaneous determination of creatinine and urea clearance
(d) Radioisotope $^{125}$I-iothalamate clearance

**14.** The following drugs can cause Acute Interstitial Nephritis except :
(a) NSAIDs (Non Steroidal Anti-Inflammatory Drugs)
(b) Prednisolone
(c) Allopurinol
(d) Penicillamine

**15.** Which one of the following is not a feature of renal artery stenosis ?
(a) Hypertension responds well to drugs
(b) Kidneys may be asymmetrical
(c) Atherosclerotic plaques are common
(d) Serum creatinine may increase with ACE inhibitors

**16.** Consider the following statements regarding membranous nephropathy :
1. Idiopathic membranous nephropathy has strong association with HLA – DRw3.
2. Microscopic haematuria is commonly detected in 60% of patients.
3. Hypertension is a common association.
4. Renal vein thrombosis may occur in nearly 50% of patients.

Which of the statements given above are correct ?
(a) 1, 2 and 3
(b) 1, 3 and 4
(c) 1, 2 and 4
(d) 2, 3 and 4

**17.** The following can lead to acute renal failure due to intrinsic renal disease except :
(a) Systemic lupus erythematosus
(b) Leptospirosis
(c) Hepatorenal syndrome
(d) Hemolytic uraemic syndrome

**18.** Restless legs syndrome in chronic renal failure may respond to
(a) Quinine
(b) Clonazepam
(c) Vitamin E
(d) Vitamin D

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**58.** Consider the following disorders :
1. Sydenham's chorea
2. Migraine
3. Mania
4. Obsessive compulsive disorder

Valproic acid is used in which of the above disorders?
(a) 1 and 3 only
(b) 2 and 4 only
(c) 1, 2 and 3
(d) 2, 3 and 4

**59.** In schizophrenia, the following are considered to be negative symptoms except :
(a) Anhedonia
(b) Decreased emotional expression
(c) Impaired concentration
(d) Hallucinations

**60.** Consider the following medical conditions :
1. Recent myocardial infarction
2. Cerebrovascular accident
3. Artificial heart valve
4. Retinal detachment

Electroconvulsive therapy is contraindicated in
(a) 1 and 3 only
(b) 2 and 4 only
(c) 2, 3 and 4
(d) 1, 2 and 4

**61.** Lithium is the drug of choice for the treatment of
(a) Bipolar disorder
(b) Dysthymia
(c) Anxiety neurosis
(d) Schizophrenia

**62.** The following are X-linked disorders except:
(a) Cystic fibrosis
(b) Haemophilia A
(c) Duchenne muscular dystrophy
(d) Haemophilia B

**63.** Match List I with List II and select the correct answer using the code given below the lists :

| | **List I (Medical condition)** | | **List II (Presentation)** |
|---|---|---|---|
| A | Myxoedema | 1 | Anosmia |
| B | Kallmann syndrome | 2 | Hypouricaemia |
| C | Hyperald -osteronism | 3 | Alkalosis |
| D | Hepatic failure | 4 | Pseudomyotonia |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-3 D-2
(d) A-3 B-1 C-2 D-4

**64.** Which one of the following myopathies is correctly matched ?
(a) Facioscapulohumeral : Autosomal recessive
(b) Limb girdle type : Autosomal dominant
(c) Dystrophia myotonica : Autosomal dominant
(d) Duchenne muscular dystrophy : X-linked recessive

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**65.** Prader-Willi syndrome includes the following except:
(a) Congenital hypotonia
(b) Obesity and hyperphagia
(c) Mental retardation
(d) Café-au-lait spots

**66.** The following drugs can be used for the management of status asthmaticus except :
(a) Magnesium sulphate
(b) Montelukast
(c) Corticosteroid
(d) Adrenaline

**67.** A 36-year-old woman presents with muscle weakness. Her serum $K^+$ value is 2.0 mEq/L. Consider the following as the possible causes:
1. Persistent vomiting
2. Acute intravascular haemolysis
3. Conn's syndrome

28. Progesterone is associated with the following except:
(a) Breast swelling
(b) Increased myometrial contractility
(c) Thermogenesis
(d) Endometrial proliferation

29. Which one of the following is HLA associated Diabetes mellitus ?
(a) Type I Diabetes mellitus
(b) Type II Diabetes mellitus
(c) Stress related Diabetes mellitus
(d) Gestational Diabetes mellitus

30. A 65-year-old woman with history of Type 2 Diabetes mellitus for the last eight years dies in a hospital. She had no other significant medical history. Which of the following is the most likely cause of her death ?
(a) Diabetic ketoacidosis
(b) Myocardial infarction
(c) Renal failure
(d) Stroke

31. Gynaecomastia may occur in the following conditions except :
(a) Physiologic response to puberty
(b) Primary hypogonadism
(c) Primary aldosteronism
(d) Choriocarcinoma testis

32. A 75-year-old lady is diagnosed of having a thyroid malignancy. Her serum calcium is low. What is the most likely explanation ?
(a) She has developed metastasis to the parathyroid
(b) She has Follicular carcinoma
(c) She has Papillary carcinoma
(d) She has Medullary carcinoma

33. Haemodialysis is useful in the management of overdose/poisoning of the following drugs except :
(a) Lithium
(b) Theophylline
(c) Chloramphenicol
(d) Salicylates

34. A 25-year-old hypertensive man with a history of recurrent calcium-containing renal calculi presents to the emergency department with excruciating flank pain and blood in the urine. This patient is likely to have which one of the following underlying disorders?
(a) Chronic proteus infection
(b) Factor VIII deficiency
(c) Hyperaldosteronism
(d) Hyperparathyroidism

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35. A 26-year-old woman presents with scanty menstrual bleeding and milk secretion from the breasts. On examination, she has galactorrhea and dry skin. A lateral skull radiograph shows enlargement of the sella. The test that will be most helpful in the diagnosis is
(a) Serum prolactin level
(b) Serum ACTH level
(c) Serum ADH level
(d) Serum TSH level

36. A 45-year-old male, who was operated for fracture of the femur neck, developed severe chest pain, dyspnoea and streaky haemoptysis followed by hypotension on the 4th post-operative day. The likely aetiology is
(a) Myocardial infarction
(b) Pulmonary embolism
(c) Acute respiratory distress syndrome
(d) Aortic dissection

37. Hypercalcaemia caused by which one of the following is most likely to respond to treatment with corticosteroids ?
(a) Primary hyperparathyroidism
(b) Milk alkali syndrome
(c) Sarcoidosis
(d) Paget's disease

Utilizing fly-ash based cement recycles industrial waste and lowers the greenhouse gas intensity of construction compared to conventional cement. Meanwhile, LED lamps are far more energy-efficient and have a longer lifespan than incandescent bulbs, cutting electricity consumption and thereby reducing carbon emissions. Both measures are recognized strategies to reduce environmental impact and carbon footprint.

**110.** (b) A-1 B-2 C-3 D-4

Dehang-Debang Biosphere Reserve is in Arunachal Pradesh (A→1), Manas in Assam (B→2), Nokrek in Meghalaya (C→3), and Simlipal in Odisha (formerly Orissa) (D→4). Each of these biosphere reserves is located in a distinct ecological zone, reflecting India's biodiversity. Hence, the pairing is A=1, B=2, C=3, D=4.

**111.** (d) A-2 B-4 C-1 D-3

Bhopal is known for heavy electricals (BHEL) → A=2, Kapurthala in Punjab is famed for its Rail Coach Factory → B=4, Visakhapatnam (Vizag) has a major steel plant → C=1, and Vadodara (Baroda) is a hub for petrochemicals → D=3. Thus, the correct matching is A=2, B=4, C=1, D=3.

**112.** (c) 2 only

Recent studies show that curcumin integrates into cell membranes, stabilizing them and making them less susceptible to microbial invasion. There is no well-established evidence that it causes rapid WBC proliferation or rapid antibody synthesis. Its main recognized mechanism is altering membrane properties and exerting anti-inflammatory effects rather than robustly boosting WBC or antibody production. Hence only statement (2) stands correct.

**113.** (b) 1 and 2 only

Both the Betwa and Chambal rivers are well-known tributaries of the Yamuna. The Sone River flows eastward and joins the Ganga, not the Yamuna. Hence, only Betwa (1) and Chambal (2) join the Yamuna.

**114.** (a) 1 and 2 only

Holography is used in high-density data storage (holographic storage) and in security features (to prevent counterfeiting on currency, credit cards, etc.). However, it is not a routine modality for destroying cancer cells (that usually involves lasers or other focused therapies) nor is it standard for detecting kidney stones (commonly done by ultrasound, X-ray, or CT). Hence, (1) and (2) are correct uses of holography, while (3) and (4) are not typical.

**115.** (c) Both 1 and 2

Elevated ozone is known to irritate airways and worsen asthma symptoms. Meanwhile, spikes in particulate matter (PM) air pollution have been linked to increased cardiovascular events, including acute myocardial infarctions. Thus both statements are supported by epidemiological and clinical evidence.

**116.** (b) 2 and 3 only

Commiphora wightii (guggul) grows chiefly in arid or semi-arid regions (e.g., Rajasthan, Gujarat), not exclusively in the tropical rain forests of northeast India, so statement (1) is incorrect. Its gum resin is used in Ayurvedic medicine and is reported to help lower LDL (bad) cholesterol levels. Hence, (2) and (3) are correct, while (1) is false.

**117.** (a) Pulses

Pulses (legumes) form symbiotic relationships with Rhizobium bacteria in their root nodules, enabling atmospheric nitrogen fixation. Cereals and tubers generally do not have such nodular nitrogen fixation, and sugarcane/beetroot also lack the classic nodule-based nitrogen fixation found in legumes.

**118.** (a) Vitamin A

"Golden rice" is engineered to produce beta-carotene, a precursor to Vitamin A, in the grain's endosperm. Its development aims to address Vitamin A deficiency, a leading preventable

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**49.** A pregnant woman has contracted malaria. Which of the following drugs should not be used by her?
1. Chloroquine
2. Primaquine
3. Quinine
4. Mefloquine

Select the correct answer using the code given below:
(a) 1 only
(b) 1 and 3 only
(c) 2 and 4 only
(d) 1, 2 and 3

**50.** Which of the following statements about cysticercosis is true?
(a) The causative agent is Echinococcus granulosus.
(b) The definitive host is man.
(c) Human cysticercosis is transmitted by the ingestion of ova.
(d) Levamisole is the treatment of choice.

**51.** Consider the following :
1. Goodpasture's syndrome
2. Myasthenia gravis
3. Guillain-Barré syndrome

In which of the above conditions may plasmapheresis be useful?
(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

**52.** With which of the following group of anti-retroviral drugs are dyslipidemia, insulin resistance, diabetes mellitus with abdominal obesity and skeletal wasting linked ?
(a) Reverse transcriptase inhibitors
(b) Integrase inhibitors
(c) Protease inhibitors
(d) Entry inhibitors

**53.** Enalapril use is not advisable in the following conditions except :
(a) Single kidney
(b) Diabetic nephropathy with albuminuria
(c) Bilateral renal artery stenosis
(d) Hyperkalaemia

**54.** A 20-year-old male presents with pain in the knee joints for the last two weeks. He also has mild backache and stiffness. He had fever and diarrhoea four weeks previous to developing these complaints. The patient is afebrile and has no diarrhoea. His laboratory investigations reveal normal ESR and elevated CRP. What is the most probable diagnosis ?
(a) Ankylosing spondylitis
(b) Rheumatoid arthritis
(c) Enteropathic arthritis
(d) Reactive arthritis

**55.** Which one of the following clinical features is not characteristic of Giant Cell Arteritis ?
(a) Headache is usually the first symptom
(b) Jaw pain during chewing
(c) Palatal paralysis
(d) Loss of visual acuity

**56.** Which one of the following statements is best suited for isolated polymyalgia rheumatica ?
(a) Temporal artery biopsy is necessary to confirm the diagnosis
(b) Response to oral corticosteroids typically occurs within seven days
(c) Corticosteroid therapy should be withdrawn after six months
(d) Sudden uniocular blindness suggests steroid-induced cataract

**57.** Which of the following constitute Felty's syndrome?
(a) Rheumatoid arthritis, splenomegaly and neutropenia
(b) Rheumatoid arthritis, hepatomegaly and neutropenia
(c) Rheumatoid arthritis, psoriasis and anaemia
(d) Reactive arthritis, splenomegaly and anaemia

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# QUESTION PAPER 2011

1. A 38-year-old man presents with chest pain and shortness of breath. His pulse rate is 85/min, blood pressure is 180/118 mmHg and the cardiac auscultation reveals an ejection systolic murmur. The ECG shows LVH pattern and ST depression in the anterior leads. His Troponin T test is positive. The echocardiogram of the person is likely to reveal
   (a) Aortic regurgitation
   (b) Aortic stenosis
   (c) Mitral regurgitation
   (d) Mitral valve prolapse

2. A young woman in the mid-20s with abnormally low body weight reports binge eating and purging 5 – 10 times a week for the last several years. She has intense fear of becoming fat and has a feeling that she is fat despite an objectively low weight. She has also developed amenorrhoea. What is the most appropriate diagnosis?
   (a) Anorexia nervosa
   (b) Bulimia nervosa
   (c) Endogenous depression
   (d) Schizophrenia

3. A patient is admitted with severe diarrhoea and vomiting. On examination, he is hypotensive and dehydrated. His haemoglobin is 19 gm%. The most likely reason for raised haemoglobin is
   (a) Relative polycythaemia
   (b) Secondary polycythaemia
   (c) Polycythaemia vera
   (d) Essential thrombocythaemia

4. Consider the following statements :
   During an acute attack of asthma :
   1. Pulsus paradoxus develops when the $FEV_1$ is less than 25 per cent of the predicted value.
   2. A normal to increased $PaCO_2$ signals a severe airway obstruction and impending respiratory failure.
   3. The arterial $PaCO_2$ decreases and the arterial pH increases.
   4. The presence of cyanosis is a reliable prognostic sign.

   Which of the statements given above are correct ?
   (a) 1, 2 and 3
   (b) 2, 3 and 4
   (c) 1, 3 and 4
   (d) 1, 2 and 4

5. A 30-year-old man presents with fever and progressively increasing breathlessness since the last two weeks. His clinical examination reveals : pulse 120/min regular, BP 100/60 mmHg, and muffled $S_1$ and $S_2$ heart sounds. The distended jugular vein has a rapid X descent, with an absent Y descent. What is the probable diagnosis ?
   (a) Right ventricular failure
   (b) Constrictive pericarditis
   (c) Cardiac tamponade
   (d) Left ventricular failure

6. A 45-year-old male has rhinitis, bronchial asthma, eosinophilia and systemic vasculitis. What is the probable diagnosis ?
   (a) Goodpasture's syndrome
   (b) Cryptogenic fibrosing alveolitis
   (c) Churg-Strauss syndrome
   (d) Sarcoidosis

7. A 2-year-old child presents with a history of accidental ingestion of kerosene. He has cough, dyspnoea, high fever and his chest radiograph shows ill-defined patchy opacities. What is the most probable diagnosis?
   (a) Loeffler's syndrome
   (b) E. coli pneumonia
   (c) Allergic bronchopulmonary aspergillosis
   (d) Lipoid pneumonia

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4. Rhabdomyolysis

Select the correct answer using the code given below:

(a) 1 only
(b) 1 and 3 only
(c) 2 and 4 only
(d) 3 and 4 only

**68.** The most common finding associated with fibromyalgia syndrome is

(a) High ESR
(b) Musculoskeletal pain without local tenderness
(c) Spontaneous resolution of symptoms
(d) Tiredness and insomnia

**69.** Digoxin is contraindicated in

(a) Supraventricular tachycardia
(b) Hypertrophic cardiomyopathy
(c) Atrial fibrillation
(d) Congestive cardiac failure

**70.** A 45-year-old man is hospitalised with acute inferior wall myocardial infarction. He develops sinus bradycardia at 40 beats per minute and his blood pressure is 100/60 mmHg. Which of the following should be the first-line intervention ?

(a) IV atropine
(b) IV dopamine
(c) IV isoproterenol
(d) Temporary pacemaker

**71.** A 3-kg male infant is cyanotic at birth. On cardiac auscultation, the first heart sound is normal, and the second heart sound is single. A grade III/IV harsh ejection systolic murmur is present along the lower left sternal border. The ECG shows left axis deviation, right atrial enlargement and left ventricular hypertrophy. What is the likely diagnosis ?

(a) Tricuspid atresia
(b) Pulmonary atresia
(c) Total anomalous pulmonary venous return
(d) Transposition of Great Arteries with ventricular septal defect

**72.** The most common congenital cardiac abnormality associated with the maternal rubella infection during pregnancy is

(a) Atrial septal defect
(b) Patent ductus arteriosus
(c) Ventricular septal defect
(d) Coarctation of aorta

**73.** A 9-month-old infant is brought with a history of low grade fever, cough and breathlessness for the last two days. He does not appear toxic or cyanosed. His respiratory rate is 64/min and the chest has few crepitations, but he has a bilateral wheeze. The chest X-ray shows hyperinflation of the lungs. The most likely diagnosis is

(a) Acute laryngotracheobronchitis
(b) Bronchiolitis
(c) Endobronchial tuberculosis
(d) Bronchial asthma

**74.** A 7-month-old infant presents with stridor since the tenth day of life. What is the most likely cause ?

(a) Laryngotracheobronchitis
(b) Tracheo-esophageal fistula
(c) Laryngomalacia
(d) Eventration of the diaphragm

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**75.** Which of the following drugs are used in a patient with Tetralogy of Fallot ?

(a) Digoxin, Furosemide and Oxygen
(b) Morphine, Soda-bicarb and Propranolol
(c) Atenolol with D.C. converter
(d) Captopril with Aminophylline

**76.** A 10-year-old male child presents with purpuric rashes on the lower extremities, haematuria, abdominal pain and arthritis but has no history of fever. What is the most likely diagnosis ?

(a) Meningococcal meningitis
(b) Henoch-Schönlein purpura
(c) Idiopathic thrombocytopenic purpura
(d) Haemolytic uraemic syndrome

**77.** The features of haemolytic uraemic syndrome in children include :

1. 'Helmet cells' in peripheral blood smear

**114.** The National Flag is a horizontal tri-colour. The deep saffron colour at the top represents
(a) Faith and chivalry
(b) Peace and harmony
(c) Truth and wisdom
(d) Courage and sacrifice

**115.** In India, the farmers traditionally sow the kharif crop during which of the following months ?
(a) October/November
(b) June/July
(c) September/October
(d) December/January

**116.** All of the following Indian rivers are snow-fed except :
(a) Sone
(b) Jhelum
(c) Chenab
(d) Sutlej

**117.** All of the following rivers join the Ganga except :
(a) Gumti
(b) Mahanadi
(c) Alaknanda
(d) Sone

**118.** Which one of the following is not an ionising radiation ?
(a) Infrared radiation
(b) X-rays
(c) Gamma rays
(d) Cosmic rays

**119.** Human beings can tolerate a daily exposure of up to what level of noise without suffering a substantial damage to hearing ?
(a) 25 dB
(b) 45 dB
(c) 65 dB
(d) 85 dB

**120.** Which of the following is the National Aquatic Animal of India ?
(a) Salt Water Crocodile
(b) Sea Turtle
(c) Dugong
(d) Dolphin

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**88.** Patients receiving INH therapy require supplementation with which of the following vitamins ?
(a) Thiamine
(b) Pyridoxine
(c) Niacin
(d) Folic acid

**89.** A 10-year-old girl is brought with recent onset abnormal body movements and emotional lability. She has a history of recurrent sore throat in the past. On examination, she is found to have jerky movements of upper limbs and facial grimacing. What is the likely diagnosis ?
(a) Wilson's disease
(b) Rheumatic chorea
(c) Encephalitis
(d) Brain tumour

**90.** Which drug among the following can produce pseudotumour cerebri ?
(a) Nalidixic acid
(b) Ampicillin
(c) Chloramphenicol
(d) Ceftriaxone

**91.** In the Union Government, the Council of Ministers is collectively responsible to
(a) Prime Minister
(b) Lok Sabha
(c) Both Lok Sabha and Rajya Sabha
(d) Union Cabinet

**92.** If the annual Union Budget is not passed by Lok Sabha,
(a) the President of India asks the Finance Minister to resign
(b) the Prime Minister asks the Finance Minister to resign
(c) the Speaker of the Lok Sabha asks the Finance Minister to modify it and present it again
(d) the Prime Minister submits the resignation of his Cabinet

**93.** The Judges of a High Court are appointed by
(a) The President of India
(b) The Governor of the State concerned
(c) The Chief Justice of India
(d) Union Ministry of Law

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**94.** Whose duty is it to recommend to the President of India as to the distribution and allocation of the net proceeds of taxes in the context of Centre-State fiscal relations ?
(a) Planning Commission
(b) Finance Commission
(c) National Development Council
(d) Union Ministry of Finance

**95.** Match List I with List II and select the correct answer using the code given below the lists :

| | **List I (Crops)** | | **List II (Producer)** |
|---|---|---|---|
| A | Tea | 1 | Andhra Pradesh |
| B | Jute | 2 | Kerala |
| C | Rubber | 3 | Orissa |
| D | Tobacco | 4 | Tamil Nadu |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-3 C-2 D-1
(d) A-3 B-1 C-2 D-4

**96.** Match List I with List II and select the correct answer using the code given below the lists :

| | **List I (Lake)** | | **List II (State)** |
|---|---|---|---|
| A | Chilika Lake | 1 | Andhra Pradesh |
| B | Kolleru Lake | 2 | Kerala |
| C | Sambhar Lake | 3 | Orissa |
| D | Vembanad Lake | 4 | Rajasthan |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-4 D-2

**97.** Which of the following is the longest river of India ?
(a) Ganga
(b) Brahmaputra
(c) Jamuna

(d) Sutlej

**98.** Among the following who was the personal physician of Gautam Buddha ?
(a) Sushruta
(b) Charak
(c) Jeevaka
(d) Nagarjuna

**99.** The focus of the Bharat Nirman programme launched in 2005 – 06 is principally to
(a) Bridge the gap between small towns and metro cities and improve the quality of life of the poor
(b) Bridge the gap between the slums and regular colonies in metro cities and improve the quality of life of the poor
(c) Bridge the gap between the rural and urban areas and improve the quality of life of the poor
(d) Bridge the gap between the poor and the rich in the rural areas and improve the quality of life of the poor

**100.** The objective of the National Rural Livelihood Mission is to eradicate poverty by
(a) 2012 – 13
(b) 2013 – 14
(c) 2014 – 15
(d) 2015 – 16

**101.** Which one of the following taxes is levied by the State Governments in India ?
(a) Service tax
(b) Sales tax
(c) Excise duty
(d) Securities transaction tax

**102.** Which one of the following languages was added to the list of Scheduled Languages of India as per the 92nd Amendment in 2003 ?
(a) Manipuri
(b) Konkani
(c) Santhali
(d) Kashmiri

**103.** Match List I with List II and select the correct answer using the code given below the lists :

| | **List I (National Park)** | | **List II (State)** |
|---|---|---|---|
| A | Silent Valley | 1 | Kerala |
| B | Kaziranga | 2 | Assam |
| C | Dudwa | 3 | Uttar Pradesh |
| D | Sariska | 4 | Rajasthan |

Code :
(a) A-1 B-2 C-3 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-2 D-4

**104.** For India's next lunar mission, Chandrayaan-2, the country has teamed up with which other country ?
(a) USA
(b) Japan
(c) China
(d) Russia

**105.** The prime mission of the National Mission on Sustainable Habitat is to
(a) Systematically change the land use pattern
(b) Ensure afforestation of degraded forest lands and expand forest cover
(c) Develop climate resistant crops and improve agricultural practices
(d) Promote energy efficiency as a core component of urban planning

**106.** Carbon credits are issued in the terms of units of Certified Emission Reduction (CER). Each CER is equivalent to
(a) 1 kg of $CO_2$ reduction
(b) 10 kg of $CO_2$ reduction
(c) 100 kg of $CO_2$ reduction
(d) 1 tonne of $CO_2$ reduction

**107.** Tomatoes are rich in which one of the following antioxidants ?
(a) Allicin
(b) Curcumin
(c) Lignans
(d) Lycopene

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**108.** Consider the following :
1. Vulnerability to death at a relatively early age
2. Adult literacy rate
3. Percentage of the population not using an improved water source
4. Percentage of families having water-seal toilets

Which of the above dimensions are used for measuring the Human Poverty Index-1 (HPI-1) as per the UNDP ?
(a) 1, 2 and 3 only
(b) 3 and 4 only
(c) 1, 2, 3 and 4
(d) 4 only

**109.** How is the Human Poverty Index-2 (HPI-2) different from the Human Poverty Index-1 (HPI-1) as described in the UNDP ?
(a) It also captures the Financial Inclusion
(b) It also captures the Social Exclusion
(c) It also captures the Geriatric Empowerment
(d) It also captures the Occupational Health

**110.** Consider the following statements :
1. The per capita income of Kerala is much higher than the national average.
2. The female literacy rate of Kerala is much higher than the national average.
3. The transport network in Kerala provides easy access to healthcare services.
4. Effective land reform has permitted the poor people in Kerala to gain access to land resources.

Which of the above stand true for the state of Kerala and have helped the state to surpass the other states in achieving better health indices ?
(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 2, 3 and 4
(d) 2 only

**111.** While managing a mass disaster, the term triage applies to
(a) It is the principle of "first come, first treated.
(b) It is the classification of the injured on the basis of severity of injuries with the concept of treating the most seriously injured first.
(c) It is the classification of the injured on the basis of severity of injuries with the concept of treating the children and adolescents first.
(d) It is the classification of the injured on the basis of severity of injuries with the concept of treating those first who are likely to survive with medical intervention.

**112.** The internationally accepted four-colour code system has been adopted by many countries to carry out triage in the situation of mass emergencies. Match the colour with its significance and pick the correct answer using the code given below :

| | **List I (Colour)** | | **List II (Significance)** |
|---|---|---|---|
| A | Red | 1 | Moribund patients |
| B | Yellow | 2 | Medium priority treatment |
| C | Green | 3 | High priority treatment |
| D | Black | 4 | Ambulatory patients |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-3 B-2 C-4 D-1

**113.** Consider the following statements :
1. The state emblem of India is an adaptation from the Sarnath Lion.
2. The Sarnath Lion originally comes from the capital of Asoka the Emperor.
3. The Government adopted the emblem on 15th August 1947.
4. In the original Sarnath Capital, there are four lions.

Which of the above statements stand true with regard to the state emblem of India ?
(a) 1, 2 and 3 only
(b) 1, 2 and 4 only
(c) 1, 2, 3 and 4
(d) 1 and 3 only

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2. Thrombocytopenia
3. Positive Coombs' test

Select the correct answer using the code given below:
(a) 1, 2 and 3
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1 and 3 only

**78.** A 2-year-old child with severe dehydration has sudden onset gross haematuria with a unilateral flank mass. The most likely diagnosis is
(a) Haemolytic uraemic syndrome
(b) Wilms' tumour
(c) Renal vein thrombosis
(d) Hydronephrosis

**79.** Which one of the following is the most abundant constituent of the human surfactant ?
(a) Phosphatidyl ethanolamine
(b) Phosphatidyl inositol
(c) Phosphatidyl glycerol
(d) Phosphatidyl choline

**80.** A 2-day-old newborn baby is brought with a history of blood in the vomitus. The baby was born full-term by a normal vaginal delivery and cried immediately at birth. He was accepting the breastfeeds well. On examination, the baby is active and alert. His abdomen is soft and there is no other evidence of bleeding. His bowel sounds are normal. The platelet count is 1,75,000 per $mm^3$. What is the most probable diagnosis ?
(a) Haemolytic disease of the newborn
(b) Disseminated intravascular coagulation
(c) Von Willebrand disease
(d) Hemorrhagic disease of the newborn

**81.** The first permanent tooth to erupt is the
(a) Lower incisor
(b) Molar
(c) Canine
(d) Premolar

**82.** What is the most likely diagnosis in a neonate with multiple, healed fractures of long bones ?
(a) Osteomalacia
(b) Osteopetrosis
(c) Osteogenesis imperfecta
(d) Congenital rickets

**83.** The following are the components of Apgar score except :
(a) Colour
(b) Muscle tone
(c) Heart rate
(d) Respiratory rate

**84.** Under the Jones Criteria, which one of the following is a major criterion for the diagnosis of acute rheumatic fever ?
(a) Elevated acute phase reactants
(b) Elevated ASO titre
(c) Increased PR interval
(d) Carditis

**85.** In a patient of primary hypothyroidism, the hormonal profile will read
(a) Low $T_3$, low $T_4$, low TSH
(b) Low $T_3$, low $T_4$, high TSH
(c) High $T_3$, high $T_4$, high TSH
(d) Low $T_3$, low $T_4$, normal TSH

**86.** Which of the following is not typical of simple febrile seizures ?
(a) The age of onset is usually between six months and six years
(b) The seizures last for less than 30 minutes
(c) The seizures are more likely to occur if the body temperature rises rapidly
(d) The seizures are followed by Todd's paralysis

**87.** Which of the following is an Angiotensin Converting Enzyme (ACE) inhibitor ?
(a) Atenolol
(b) Prazosin
(c) Hydralazine
(d) Enalapril

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# PAPER 2011 ANSWERS

1. (b) Aortic stenosis

An ejection systolic murmur (best heard in the aortic area) and left ventricular hypertrophy on ECG strongly suggest a pressure overload state, which is characteristic of aortic stenosis. The patient's high blood pressure and chest pain further point to significant outflow obstruction. Positive troponin indicates myocardial strain or injury, which can accompany severe aortic stenosis. The echocardiogram in such cases typically shows thickened, calcified aortic valve cusps with restricted opening, confirming aortic stenosis.

2. (a) Anorexia nervosa

Although this patient binges and purges, her abnormally low weight and amenorrhea point strongly to Anorexia Nervosa (binge/purge subtype). Bulimia Nervosa generally involves normal or above-normal body weight. The key features here are an intense fear of weight gain, persistent behavior to prevent weight gain (including purging), and a significantly low body weight. The presence of amenorrhea further supports Anorexia Nervosa.

3. (a) Relative polycythaemia

Severe diarrhea and vomiting cause significant volume depletion, which concentrates circulating red blood cells and increases the measured hemoglobin, a phenomenon called relative polycythemia. In secondary polycythemia or polycythemia vera, the red cell mass itself is actually increased. Here, the likely culprit is dehydration-induced hemoconcentration, rather than a true overproduction of red blood cells. Rehydration typically lowers the elevated hemoglobin level in such cases.

4. (a) 1, 2 and 3

In an acute severe asthma attack, a marked drop in $FEV_1$ (below 25% predicted) often correlates with pulsus paradoxus. Early in the attack, patients hyperventilate, lowering $PaCO_2$ and raising pH (respiratory alkalosis). If $PaCO_2$ normalizes or rises, it signals worsening airflow and impending respiratory failure. Cyanosis, however, is not a reliable or early prognostic sign, as significant hypoxemia can occur without obvious cyanosis. Thus, statements 1, 2, and 3 are correct.

5. (c) Cardiac tamponade

Muffled heart sounds, hypotension, and jugular venous distension (the classic Beck's triad) are hallmark findings of cardiac tamponade. The hemodynamics produce a prominent (or rapid) X descent but an absent Y descent on jugular venous pulse tracings. In constrictive pericarditis, by contrast, there is a rapid Y descent. The patient's recent onset of fever and breathlessness alongside these signs makes tamponade (fluid in the pericardial space impairing ventricular filling) the most likely diagnosis.

6. (c) Churg-Strauss syndrome

Churg-Strauss syndrome (also known as Eosinophilic Granulomatosis with Polyangiitis) is characterized by asthma, eosinophilia, and vasculitis. Nasal polyps or rhinitis often occur as part of the respiratory manifestations. Goodpasture's syndrome typically involves hemoptysis and glomerulonephritis, sarcoidosis features noncaseating granulomas, and cryptogenic fibrosing alveolitis leads more to fibrotic lung changes without significant eosinophilia. The combination of asthma, sinus/nasal symptoms, high eosinophil count, and vasculitis strongly suggests Churg-Strauss.

7. (d) Lipoid pneumonia

When a child inhales or ingests petroleum-based hydrocarbons like kerosene, it can lead to lipoid pneumonia. The hydrocarbon material provokes an inflammatory response in the lungs, causing patchy, ill-defined infiltrates on the chest radiograph. Loeffler's syndrome is

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a transient respiratory illness associated with eosinophilia; E. coli pneumonia is less typical in this clinical setting. Allergic bronchopulmonary aspergillosis mainly arises in asthmatics with fungal hypersensitivity. Lipoid pneumonia best fits the kerosene ingestion history and imaging findings.

**8.** (a) Wegener's granulomatosis

Wegener's granulomatosis (now called Granulomatosis with Polyangiitis) can present with cavitary lung lesions and renal involvement (glomerulonephritis), leading to hematuria. Tuberculosis can cause cavitation but is less commonly associated with simultaneous haematuria unless there is direct renal TB. Renal cell carcinoma can cause hematuria but would not usually produce multiple cavitary lung lesions in this pattern (it may metastasize but typically appears as nodules). SLE can involve kidneys but typically does not cause multiple lung cavities.

**9.** (c) Hypocalcaemia

Zollinger-Ellison syndrome involves a gastrin-secreting tumor (gastrinoma) that leads to profound gastric acid hypersecretion. Patients commonly have multiple or refractory peptic ulcers and often develop diarrhea and steatorrhea due to excessive acid inactivating pancreatic enzymes. Hypergastrinemia is a defining feature. Though hypercalcemia can be associated (especially if part of MEN1), hypocalcemia is not typical and is therefore the "except" item.

**10.** (c) Wilson's disease

Kayser-Fleischer rings are copper deposits in Descemet's membrane of the cornea, best seen by slit-lamp examination. Their presence is pathognomonic for Wilson's disease, a disorder of copper metabolism caused by mutations in the ATP7B gene. In alcoholic cirrhosis or primary biliary cirrhosis, such corneal rings are not characteristic. Crigler-Najjar syndrome involves problems with bilirubin conjugation and does not feature copper deposition. Thus, Wilson's disease is the condition definitively associated with Kayser-Fleischer rings.

**11.** (d) Patterson-Kelly syndrome

Patterson-Kelly syndrome (also known as Plummer-Vinson syndrome) is characterized by dysphagia for solids, iron deficiency anemia, and esophageal webs. The syndrome typically appears in middle-aged women with long-standing iron deficiency and leads to mucosal changes that contribute to web formation. Pharyngeal pouch typically presents with regurgitation and gurgling in the neck; carcinoma of the esophagus often has progressive dysphagia for solids then liquids; dysphagia lusoria is due to a vascular anomaly.

**12.** (a) Haemolysis

Although the wording here is confusing, Dubin-Johnson syndrome is classically associated with isolated conjugated (direct) hyperbilirubinemia. By contrast, hemolysis, Gilbert's syndrome, and Crigler-Najjar all primarily cause unconjugated (indirect) hyperbilirubinemia. Of these, haemolysis most distinctly elevates unconjugated bilirubin because of excess breakdown of red blood cells. Therefore, under the question's phrasing, haemolysis is the "except" for an isolated conjugated hyperbilirubinemia scenario.

**13.** (d) Radioisotope $^{125}$I-iothalamate clearance

True GFR measurement requires using a substance that is freely filtered and neither reabsorbed nor secreted by the kidney. In practice, inulin clearance is the historical gold standard, but radioisotopes like $^{125}$I-iothalamate also closely measure real GFR. Serum creatinine or creatinine clearance tends to overestimate GFR slightly due to tubular secretion of creatinine, and urea clearance is affected by reabsorption changes. Hence, $^{125}$I-iothalamate clearance remains one of the most accurate measures of GFR.

**14.** (b) Prednisolone

Acute Interstitial Nephritis (AIN) is commonly triggered by certain medications. NSAIDs, some antibiotics (like penicillins), and even drugs like allopurinol and penicillamine have been implicated in AIN. Prednisolone, however, is actually used to treat inflammatory kidney

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conditions (including AIN) rather than cause it. Thus, "prednisolone" is the correct "except" choice because it is not classically associated with initiating acute interstitial nephritis.

**15.** (a) Hypertension responds well to drugs

Renal artery stenosis commonly leads to secondary hypertension that is often resistant to standard antihypertensive therapies, making it hard to control. Atherosclerotic plaques (especially in older patients) or fibromuscular dysplasia (in younger patients) cause the narrowing, and the kidneys may become asymmetrical if one side is more affected. Because GFR depends on efferent arteriolar pressure in these patients, ACE inhibitors can reduce that pressure further and abruptly raise serum creatinine. Hence, "hypertension responds well to drugs" is not typical.

**16.** (c) 1, 2 and 4

Idiopathic membranous nephropathy is linked to HLA-DRw3, so statement 1 is correct. Microscopic hematuria is indeed found in a significant proportion (around 50–60%), so statement 2 is correct. Renal vein thrombosis risk is markedly increased (sometimes up to 30–50%), making statement 4 valid. While hypertension can appear, it is not universally considered a "common" early feature in many classic descriptions—hence 3 is somewhat less definitive, so the correct combination is 1, 2, and 4.

**17.** (c) Hepatorenal syndrome

Intrinsic renal disease typically involves direct injury to the kidney structures (glomeruli, tubules, interstitium, or small vessels). Systemic lupus erythematosus can cause lupus nephritis, leptospirosis often leads to acute tubular necrosis, and hemolytic uremic syndrome injures renal microvasculature, causing intrinsic renal failure. By contrast, hepatorenal syndrome is generally a type of pre-renal failure seen in advanced liver disease, with no primary structural damage to the kidneys. Once the liver condition improves, renal function can often recover.

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**18.** (b) Clonazepam

Restless legs syndrome (RLS) can be exacerbated by chronic renal failure. While dopaminergic drugs are the mainstay of RLS management, certain benzodiazepines such as clonazepam also help alleviate symptoms and improve sleep. Quinine is more traditionally used for nocturnal leg cramps (not specifically RLS), and vitamin supplements (E, D) are not first-line therapies for RLS. Clonazepam's sedative and muscle-relaxing effects can be beneficial in restless legs, thus making it the correct answer here.

**19.** (d) 2 and 4 (Pregnant woman and Post-renal transplant woman)

Guidelines universally recommend screening and treating asymptomatic bacteriuria in pregnancy to reduce the risk of pyelonephritis and related complications. Post-renal transplant patients are immunosuppressed, and untreated bacteriuria can progress to serious infections and compromise the graft. Conversely, young healthy women (option 1) and elderly women (option 3) do not routinely require antibiotic therapy if the bacteriuria is completely asymptomatic. Hence, only categories 2 and 4 warrant active treatment.

**20.** (d) 1, 2, 3 and 4

Autonomic dysfunction occurs in a broad range of disorders. Diabetes mellitus is well-known to cause autonomic neuropathy, and thallium poisoning can also involve autonomic fibers. Guillain-Barré syndrome often features autonomic instability (e.g. unpredictable blood pressure, heart rate changes), and amyloidosis may infiltrate autonomic nerves. Porphyria can manifest with autonomic neuropathy. While Steele-Richardson-Olszewski syndrome (Progressive Supranuclear Palsy) and ALS are primarily movement/neuron diseases, both can exhibit autonomic involvement in some cases—thus all four pairs can show autonomic dysfunction.

**21.** (c) Control blood pressure

This presentation suggests an acute ischemic stroke with expressive (motor) aphasia. Although IV tPA is indicated within the

therapeutic window (usually up to 4.5 hours), guidelines require that blood pressure be lowered below 185/110 mmHg before administering thrombolytics to reduce hemorrhagic risk. His BP is 200/110 mmHg, so the immediate step is to bring it down to an acceptable threshold. Only after that can IV tPA be safely given, provided no other contraindications exist.

**22.** (c) Demyelination of neurons

This clinical picture (episodic neurological symptoms such as sensory disturbances and visual field problems, with remission and relapse) is classic for multiple sclerosis, a demyelinating disease of the central nervous system. MRI findings typically show scattered demyelinated plaques. The mechanism involves immune-mediated attacks on myelin sheaths, causing varying neurological deficits that may partially resolve. Antibodies to acetylcholine receptors are linked with myasthenia gravis, while purely axonal degeneration and posterior column degeneration correspond to other pathologies.

**23.** (d) Hairy cell leukaemia

Myeloproliferative disorders classically include polycythemia vera, essential (or primary) thrombocythemia, chronic myeloid leukemia, and primary myelofibrosis. These arise from clonal proliferation of hematopoietic stem cells in the myeloid lineage. Hairy cell leukemia, by contrast, is a chronic B-lymphoproliferative disorder involving abnormal B cells. Although it presents with splenomegaly and cytopenias, it is not classified as a myeloproliferative neoplasm.

**24.** (b) Ximelagatran

Ximelagatran was one of the first oral direct thrombin inhibitors introduced as an alternative to warfarin. Its major advantage, at least in early trials, was that it did not require routine coagulation monitoring, unlike warfarin. Fondaparinux, while effective, is administered subcutaneously rather than orally. Snake venom derivatives and ancrod are not standard oral options. Although ximelagatran was ultimately withdrawn from many markets due to hepatic side effects, it illustrates the concept of a direct oral anticoagulant without monitoring.

**25.** (b) Increased RBC life span

Hereditary spherocytosis is caused by RBC membrane defects (commonly in spectrin or ankyrin) that render cells more spherical and prone to splenic sequestration. This leads to decreased (not increased) RBC life span. Splenomegaly is common because of extravascular hemolysis in the spleen, and pigment gallstones can form due to increased bilirubin from hemolysis. Splenectomy often improves symptoms significantly, making it a very effective treatment. Hence, "Increased RBC life span" is the incorrect statement.

**26.** (d) Serum ferritin

Serum ferritin correlates closely with total body iron stores and is considered the best single screening test for iron deficiency or iron overload under most circumstances. Although it can be raised as an acute-phase reactant in infections and inflammatory conditions, it still remains the most practical and convenient initial test. Serum iron or transferrin levels can fluctuate during the day, and hemoglobin alone does not provide direct information about iron stores.

**27.** (d) Von Willebrand disease

Classically, an isolated prolongation of aPTT (with normal PT and bleeding time) suggests a factor in the intrinsic pathway (e.g., factors VIII, IX, XI). Hemophilia is a prime suspect in such a scenario. However, since hemophilia is not listed, the question likely points to a clotting factor abnormality in the factor VIII complex. Von Willebrand disease can prolong aPTT by reducing factor VIII levels, though it often prolongs bleeding time as well. Among the options given, vWD is the closest fit.

**28.** (b) Increased myometrial contractility

Progesterone generally decreases uterine (myometrial) contractility, helping maintain pregnancy. It contributes to mammary gland development (breast swelling), raises basal body temperature (thermogenesis), and supports the secretory changes in the endometrium (building on estrogen's initial proliferative phase). Hence,

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(1), migraine (2), and mania (3) are the correct matching indications.

**59.** (d) Hallucinations

Negative symptoms in schizophrenia include reduced emotional expression (affective flattening), anhedonia (lack of pleasure), avolition (lack of motivation), alogia (poverty of speech), and social withdrawal. Hallucinations, however, are a "positive" symptom—an abnormal perceptual phenomenon. Similarly, delusions and disorganized speech/behavior also fall under positive symptoms. Impaired concentration can sometimes be considered part of cognitive deficits in schizophrenia but is closer to the "negative/cognitive" cluster than hallucinations, which are explicitly positive symptoms.

**60.** (d) 1, 2 and 4

Although there are no absolute contraindications to ECT, certain conditions pose significant risks. A recent myocardial infarction (especially within days/weeks) raises concern over hemodynamic stress, while a recent cerebrovascular accident implies fragile cerebral vasculature. Retinal detachment can worsen with the increased intraocular pressure from seizures. An artificial heart valve alone is not a direct contraindication (though prophylactic measures may be needed). Hence, conditions 1, 2, and 4 represent relative contraindications to ECT.

**61.** (a) Bipolar disorder

Lithium remains a cornerstone for managing bipolar disorder, especially the classic presentation with manic and depressive episodes. It stabilizes mood, reduces the frequency and severity of relapses, and helps prevent suicide in bipolar patients. By contrast, dysthymia (persistent depressive disorder), anxiety disorders, and schizophrenia typically require other treatments such as antidepressants, anxiolytics, or antipsychotics, respectively. Although atypical antipsychotics and anticonvulsants can also treat bipolar, lithium is historically regarded as the "drug of choice."

**62.** (a) Cystic fibrosis

Cystic fibrosis is an autosomal recessive disease caused by mutations in the CFTR gene on chromosome 7. Haemophilia A (factor VIII deficiency), Haemophilia B (factor IX deficiency), and Duchenne muscular dystrophy all follow an X-linked recessive inheritance pattern. Thus, among the listed conditions, only cystic fibrosis is not X-linked.

**63.** (c) A-4 B-1 C-3 D-2

In myxedema (severe hypothyroidism), "pseudomyotonia" (delayed relaxation of reflexes) can be seen.

1. Kallmann syndrome features anosmia (lack of smell) alongside hypogonadism.
2. Hyperaldosteronism typically produces a metabolic alkalosis (along with hypokalemia).
3. Advanced hepatic failure can result in reduced urea formation and hence "hypouricaemia."

Hence the matches are: A (Myxoedema) → 4 (Pseudomyotonia), B (Kallmann) → 1 (Anosmia), C (Hyperaldosteronism) → 3 (Alkalosis), D (Hepatic failure) → 2 (Hypouricaemia).

**64.** (d) Duchenne muscular dystrophy : X-linked recessive

Duchenne muscular dystrophy (DMD) is caused by a mutation in the dystrophin gene on the X chromosome, producing an X-linked recessive inheritance pattern. Facioscapulohumeral dystrophy typically follows an autosomal dominant pattern, and limb-girdle dystrophies can be either autosomal dominant or recessive, depending on the subtype. Myotonic dystrophy (dystrophia myotonica) is generally autosomal dominant. Therefore, the only pairing that is unequivocally correct in the list is Duchenne muscular dystrophy as X-linked recessive.

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**65.** (d) Café-au-lait spots

Prader-Willi syndrome is characterized by severe hypotonia in infancy, hyperphagia leading to obesity, intellectual impairment, and hypogonadism. The classic genetic mechanism involves loss of paternal genes on chromosome 15 (maternal uniparental disomy or deletion).

Sudden onset chest pain, dyspnea, and hemoptysis followed by hypotension is very suggestive of an acute pulmonary embolism. MI, ARDS, or aortic dissection would not typically present with all three (dyspnea, pleuritic chest pain, and hemoptysis) plus an immediate postoperative setting. PE is the classic culprit.

**37.** (c) Sarcoidosis

Sarcoidosis can cause hypercalcemia due to activated macrophages in granulomas converting vitamin D to its active form, increasing calcium absorption. Corticosteroids inhibit this process, so they often rapidly reduce serum calcium in sarcoidosis. Primary hyperparathyroidism is driven by parathyroid hormone overproduction, which is not typically reversed by steroids; milk-alkali syndrome arises from excessive calcium and alkali intake, and Paget's disease primarily involves abnormal bone remodeling.

**38.** (a) Upper GI endoscopy

A patient with chronic NSAID use (likely for ankylosing spondylitis) and presenting with acute epigastric pain plus brownish vomitus (possible "coffee-ground" emesis) raises concern for peptic ulcer disease or an upper GI bleed. The most direct test to confirm an ulcer source, visualize bleeding, and potentially treat is an upper GI endoscopy. Ultrasound abdomen evaluates the gallbladder, liver, pancreas, etc., but not as specific for suspected upper GI bleed. Ryle's tube aspiration is less definitive, and H. pylori serology is more indirect.

**39.** (a) 10 years

Traditionally, the 17D yellow fever vaccine was considered to provide protection for at least 10 years, and boosters were recommended at that interval. Recent WHO guidelines suggest a single dose may confer lifelong immunity, but in many exam or textbook contexts, the established figure remains 10 years. The vaccine is highly effective, generating lasting antibodies in the majority of recipients.

**40.** (b) Metabolic alkalosis

In metabolic alkalosis, hydrogen ions shift out of cells to compensate, driving potassium into cells and lowering serum potassium. Also, persistent alkalosis often accompanies volume contraction that leads to secondary hyperaldosteronism, which promotes renal potassium excretion. Therefore, metabolic alkalosis and hypokalemia commonly coexist. By contrast, in pure metabolic acidosis, potassium can shift out of cells and become elevated in serum.

**41.** (c) Abacavir

Zidovudine (AZT) and lamivudine are nucleoside reverse transcriptase inhibitors (NRTIs). Abacavir is another NRTI that blocks HIV's reverse transcriptase. In contrast, saquinavir, indinavir, and ritonavir are protease inhibitors, a different class of antiretrovirals. Abacavir is often part of combination therapies (e.g. with lamivudine) for HIV patients, though it can be associated with a potentially severe hypersensitivity reaction in those with certain HLA-B5701 genotypes.

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**42.** (c) Carcino Embryonic Antigen

Carcinoembryonic antigen (CEA) is most commonly associated with colorectal cancer screening and follow-up. A patient with a change in bowel habits, positive fecal occult blood, and anemia is highly suspicious for colorectal malignancy. CA-125 is linked to ovarian cancer, PSA to prostate disease, and neuron-specific enolase to certain neuroendocrine tumors (like small cell lung cancer). Thus, CEA is the logical marker to evaluate in this scenario.

**43.** (a) The clinical course of HACEK endocarditis tends to be acute and fulminant.

HACEK organisms (Haemophilus, Aggregatibacter, Cardiobacterium, Eikenella, Kingella) typically cause a more indolent (subacute) course of endocarditis, not a rapidly acute and fulminant one. Prolonged blood cultures are often needed to isolate these slow-growing bacteria, sometimes up to 2–3 weeks. Embolic phenomena can indeed be common, and echocardiography frequently reveals vegetations. Hence, "tends to be acute and fulminant" is not true.

**44.** (d) Massive splenomegaly

"increased myometrial contractility" is not associated with progesterone, making it the correct "except" item.

**29.** (a) Type I Diabetes mellitus

Type 1 diabetes mellitus is characterized by autoimmune destruction of pancreatic β-cells and has a strong genetic link with certain HLA haplotypes (notably HLA-DR3 and HLA-DR4). Type 2 diabetes does not show such a marked HLA association. Stress-related hyperglycemia and gestational diabetes are typically due to insulin resistance or transient factors, rather than the classic autoimmune, HLA-associated process that defines type 1.

**30.** (b) Myocardial infarction

Macrovascular complications—particularly coronary artery disease—are the most common cause of mortality among patients with type 2 diabetes. Although diabetic ketoacidosis and renal failure are significant complications, the leading single cause of death in long-standing type 2 diabetics remains ischemic heart disease (myocardial infarction). Diabetic patients often have accelerated atherosclerosis, putting them at high risk for MI even without classic angina.

**31.** (c) Primary aldosteronism

Gynecomastia results from an imbalance between estrogenic and androgenic effects on breast tissue. Pubertal hormonal surges can cause temporary gynecomastia. Primary hypogonadism can elevate gonadotropins, leading to increased peripheral conversion of androgens to estrogens. Choriocarcinoma of the testis produces high levels of hCG, which can act similarly to LH, boosting estrogen production. Primary aldosteronism (Conn's syndrome) does not typically raise estrogen levels or cause gynecomastia, making it the "except."

**32.** (d) She has Medullary carcinoma

Medullary thyroid carcinoma (MTC) arises from calcitonin-secreting parafollicular C-cells. Elevated calcitonin lowers blood calcium, sometimes leading to hypocalcemia. Papillary and follicular carcinomas typically do not cause calcitonin overproduction, and metastasis to the parathyroid is an unlikely scenario for hypocalcemia. MTC is therefore the clear explanation for a thyroid malignancy associated with low serum calcium.

**33.** (c) Chloramphenicol

Lithium, theophylline, and salicylates (aspirin) are all significantly dialyzable in cases of severe overdose due to their pharmacokinetic profiles (relatively small volume of distribution, water solubility). Chloramphenicol, on the other hand, tends to have a higher volume of distribution and is not removed efficiently by hemodialysis. Therefore, while dialysis is a recognized treatment in toxicity with lithium, theophylline, or salicylates, it offers minimal benefit in chloramphenicol poisoning.

**34.** (d) Hyperparathyroidism

Primary hyperparathyroidism often presents with "stones, bones, abdominal groans, and psychic moans," reflecting hypercalcemia's effects. Recurrent calcium-containing kidney stones (renal calculi), hypertension, and elevated serum calcium levels are characteristic. Proteus infections typically cause struvite stones, Factor VIII deficiency is unrelated to kidney stones, and hyperaldosteronism more classically involves hypokalemia and metabolic alkalosis rather than hypercalcemia. Thus, hyperparathyroidism is the most likely culprit.

**35.** (a) Serum prolactin level

Galactorrhea plus menstrual irregularities (scanty menses) strongly suggests hyperprolactinemia—commonly caused by a prolactinoma (a pituitary adenoma). The enlarged sella on X-ray supports a pituitary tumor. While hypothyroidism (low thyroid function) can also elevate prolactin somewhat, the hallmark test here is directly measuring serum prolactin. Very high levels confirm hyperprolactinemia as the likely cause of galactorrhea and menstrual disturbance.

**36.** (b) Pulmonary embolism

Patients recovering from major orthopedic surgery (especially hip or femur fracture repair) are at high risk of venous thromboembolism.

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IVIG) can speed recovery by removing damaging immunoglobulins. Thus, it may be useful in all three conditions.

**52.** (c) Protease inhibitors

Protease inhibitors (PIs) in HIV therapy have long been associated with the so-called "lipodystrophy syndrome," characterized by abnormal fat distribution, dyslipidemia, insulin resistance, and sometimes overt diabetes. These metabolic disturbances are less commonly caused by integrase inhibitors or entry inhibitors, and while certain NRTIs can also contribute to lipodystrophy, the classical and most pronounced metabolic issues are most closely linked to protease inhibitors (e.g. older agents like indinavir, ritonavir).

**53.** (b) Diabetic nephropathy with albuminuria

ACE inhibitors such as enalapril are actually recommended in diabetic nephropathy to reduce intraglomerular pressure and slow progression of kidney disease. Conversely, one must use extreme caution (or avoid use) in bilateral renal artery stenosis because of potential acute renal failure, in patients with a single functioning kidney (also a high risk of renal compromise), and in hyperkalemia since ACE inhibitors can further elevate potassium. Thus, diabetic nephropathy is the "except" scenario where enalapril is beneficial, not contraindicated.

**54.** (d) Reactive arthritis

Reactive arthritis (formerly Reiter's syndrome) is a sterile inflammatory arthritis that develops after either a genitourinary or gastrointestinal infection. The patient's history of fever and diarrhea a few weeks before joint symptoms fits well. Mild back involvement is possible, as reactive arthritis is part of the seronegative spondyloarthropathies. Normal ESR but elevated CRP can be seen in early or mild disease. Ankylosing spondylitis usually has more prominent spinal involvement, and rheumatoid arthritis is less likely with this history.

**55.** (c) Palatal paralysis

Giant Cell Arteritis (temporal arteritis) typically presents with new-onset headache (often temporal), jaw claudication, scalp tenderness, and visual disturbances (including transient or permanent vision loss). Jaw claudication is actually quite characteristic, and acute vision loss (or blurred vision) may occur due to involvement of the ophthalmic artery. Palatal paralysis or other cranial nerve palsies are not a usual feature of this condition, making "palatal paralysis" the best choice for "not characteristic."

**56.** (b) Response to oral corticosteroids typically occurs within seven days

Polymyalgia rheumatica (PMR) responds quite dramatically to low-dose corticosteroids, often within 24–72 hours. A quick improvement in symptoms (especially proximal muscle pain and stiffness) is almost diagnostic. Temporal artery biopsy is not always mandatory in isolated PMR (though considered if giant cell arteritis is suspected). There is no strict requirement to discontinue steroids by six months, and sudden monocular blindness would be more consistent with giant cell arteritis complication, not cataract.

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**57.** (a) Rheumatoid arthritis, splenomegaly and neutropenia

Felty's syndrome is a triad characterized by seropositive rheumatoid arthritis, splenomegaly, and neutropenia. Patients often have long-standing RA. The combination of low white cell count, a large spleen, and active joint disease fits this classic entity. Hepatomegaly or anemia are not defining features of Felty's (though anemia of chronic disease can occur in RA). Psoriasis and reactive arthritis are different arthropathies.

**58.** (c) 1, 2 and 3

Valproic acid is a broad-spectrum agent: it is an established first-line treatment for mania in bipolar disorder, a common prophylactic medication for migraine headaches, and has utility in hyperkinetic movement disorders, including Sydenham's chorea. While valproate can sometimes be used adjunctively for certain psychiatric conditions, it is not standard therapy for obsessive-compulsive disorder (where SSRIs are typical). Hence, Sydenham's chorea

is a beta-blocker, prazosin is an $\alpha_1$-blocker, and hydralazine is a direct arterial vasodilator. Among the listed choices, only enalapril is an ACE inhibitor.

**88.** (b) Pyridoxine

Isoniazid (INH) therapy can induce a deficiency of vitamin $B_6$ (pyridoxine) by binding to pyridoxal-5-phosphate and by interfering with its metabolism. This can lead to peripheral neuropathy, anemia, and other neurologic complications. Therefore, prophylactic pyridoxine supplementation is recommended for patients receiving isoniazid, especially those with risk factors (e.g., malnourished or pregnant individuals).

**89.** (b) Rheumatic chorea (Sydenham's chorea)

Also known as Sydenham's chorea, rheumatic chorea arises after a streptococcal infection (usually 1–6 months later). It manifests with sudden, purposeless, nonrepetitive movements (chorea), emotional lability, and possible "milkmaid's grip." The patient's history of recurrent sore throats points to a background of rheumatic fever. Wilson's disease typically has liver involvement and Kayser-Fleischer rings, encephalitis presents with acute systemic/neurological changes, and a brain tumor would have more focal or progressive neurological deficits.

**90.** (a) Nalidixic acid

Pseudotumor cerebri (idiopathic intracranial hypertension) can be induced by several medications (e.g., tetracyclines, excess vitamin A). Among the listed, nalidixic acid—a quinolone-like antibiotic historically used for UTIs—has been documented to cause increased intracranial pressure in children, presenting as pseudotumor cerebri. Ampicillin, chloramphenicol, and ceftriaxone are not commonly implicated in intracranial hypertension.

**91.** (b) Lok Sabha

Under India's parliamentary system, the Council of Ministers (headed by the Prime Minister) wields executive authority but must maintain the confidence of the popularly elected house—i.e. the Lok Sabha. A loss of majority support there forces the government to resign, reflecting the principle of collective responsibility. While ministers individually report to the Prime Minister, the constitutional accountability is toward the Lok Sabha, not the Rajya Sabha or the "Union Cabinet" as a separate entity.

**92.** (d) the Prime Minister submits the resignation of his Cabinet

In a parliamentary democracy, failing to pass the budget (or an equivalent money bill) is treated as a vote of no-confidence. Since the Council of Ministers is collectively responsible to the Lok Sabha, this effectively means the government does not command majority support. The Prime Minister must then submit the resignation of the entire Cabinet. The President does not dismiss individual ministers in this situation; it is the entire Council that loses its mandate.

**93.** (a) The President of India

Under the Indian Constitution, High Court judges are formally appointed by the President of India. However, this is done in consultation with the Chief Justice of India, the Governor of the respective state, and sometimes the Chief Justice of that High Court. Nonetheless, the official appointing authority remains the President. The Governor or the Law Ministry does not make the appointment directly—though their consultation is part of the process.

**94.** (b) Finance Commission

The Finance Commission (established under Article 280 of the Constitution) is constitutionally mandated to make recommendations regarding the distribution of tax revenues between the Union and the States. Its primary function is to advise on the principles governing grants-in-aid and the allocation of central tax proceeds. The Planning Commission (now replaced by NITI Aayog) and National Development Council had broader developmental advisory roles, while the Ministry of Finance implements but does not itself formally decide the distribution formula.

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Café-au-lait spots, however, are more commonly associated with neurofibromatosis or McCune-Albright syndrome, not Prader-Willi.

**66.** (b) Montelukast

Status asthmaticus is a severe, acute asthma exacerbation. Rescue treatments include high-dose bronchodilators ($\beta_2$-agonists), intravenous corticosteroids, oxygen, and sometimes IV magnesium sulphate for refractory bronchospasm. Subcutaneous or IV adrenaline (epinephrine) can be used in life-threatening situations. Montelukast (a leukotriene receptor antagonist) is mainly for chronic asthma prophylaxis and has no immediate bronchodilator effect. Therefore, it is not helpful in the acute, life-threatening setting of status asthmaticus.

**67.** (b) 1 and 3 only

Hypokalemia ($K^+$ of 2.0 mEq/L) plus muscle weakness can result from:

1. Persistent vomiting: leads to secondary hyperaldosteronism and renal potassium loss.
2. Conn's syndrome (primary hyperaldosteronism): causes increased renal potassium excretion.
3. Acute intravascular hemolysis typically releases potassium from RBCs, potentially causing hyperkalemia, not hypo.
4. Rhabdomyolysis similarly releases intracellular potassium, raising serum levels.

Hence, only (1) persistent vomiting and (3) Conn's syndrome are correct.

**68.** (d) Tiredness and insomnia

Fibromyalgia typically presents with widespread musculoskeletal pain and specific tender points rather than "pain without tenderness." The ESR is usually normal, and spontaneous complete resolution is not typical; rather, fibromyalgia often follows a chronic, relapsing course. One of the hallmark associated features is profound fatigue, poor sleep quality, and insomnia. Tiredness, nonrefreshing sleep, and insomnia are extremely common complaints in fibromyalgia patients.

**69.** (b) Hypertrophic cardiomyopathy

Digoxin is useful in certain supraventricular tachycardias (e.g., to slow AV conduction) and in atrial fibrillation for rate control, as well as in heart failure with reduced ejection fraction. However, in hypertrophic obstructive cardiomyopathy (HOCM), digoxin can worsen the outflow tract obstruction by increasing contractility. This is generally harmful, so digoxin is relatively contraindicated (unless there is concurrent AF with poor systolic function).

**70.** (a) IV atropine

Inferior wall MI often involves the right coronary artery, which can affect the SA and AV nodes, causing bradycardia. When the heart rate is under 50–60 with hypotension (or near-hypotension at BP 100/60), the first-line acute measure is intravenous atropine to block vagal influence and increase heart rate. If atropine fails, other options like IV dopamine infusion or temporary pacing can be considered. IV isoproterenol is rarely a first choice, and pacing is reserved if bradycardia persists.

**71.** (a) Tricuspid atresia

Tricuspid atresia forces all venous return to pass through an atrial septal defect into the left heart, leading to a single S2 (pulmonary valve closure is diminished). A VSD is typically present to allow blood into the right ventricle/pulmonary artery. The ECG often shows left axis deviation and LVH because the left ventricle handles the bulk of cardiac output. Pulmonary atresia can also cause cyanosis and single S2, but left axis deviation is most classically associated with tricuspid atresia.

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**72.** (b) Patent ductus arteriosus

Congenital rubella syndrome commonly affects the heart, ears, and eyes. A patent ductus arteriosus (PDA) is the most classic cardiac lesion, often discovered in infants of mothers who had rubella infection during early pregnancy. Other defects such as pulmonary artery stenosis may also occur, but PDA remains the hallmark. ASD and VSD are more generally

Leptospirosis (especially the severe form known as Weil's disease) can present with jaundice, renal failure, and hemorrhagic manifestations. Mild-to-moderate hepatomegaly may occur, but massive splenomegaly is uncharacteristic. In contrast, diseases like malaria or kala-azar are more likely to show gross splenic enlargement. The hallmark of severe leptospirosis is jaundice (often very pronounced), potential pulmonary hemorrhages, and multi-organ involvement rather than marked splenic enlargement.

**45.** (d) Tissue phase

P. falciparum-infected RBCs show marked cytoadherence to vascular endothelium, form rosettes with uninfected RBCs, and sequester in deep capillaries. These phenomena underlie severe falciparum malaria complications (e.g., cerebral malaria). While P. vivax and P. ovale have a "relapse" or "hypnozoite" stage in the liver, P. falciparum does not maintain a long-term tissue phase in the same manner. Therefore, "tissue phase" is not typically used to describe P. falciparum biology, making it the best "except."

**46.** (d) Trichuris trichiura

Trichuris trichiura (whipworm) resides predominantly in the colon (particularly the cecum). By contrast, Ascaris lumbricoides, Necator americanus (a hookworm), and Strongyloides stercoralis all primarily inhabit the small intestine. The question specifically asks which does not infest the small bowel, and Trichuris trichiura is well known for its colonic habitat.

**47.** (c) Loa loa

Lymphatic filariasis in humans is classically caused by Wuchereria bancrofti, Brugia malayi, or Brugia timori. These worms reside in the lymphatic system, causing lymphedema, elephantiasis, and related pathology. Loa loa (the African eye worm) inhabits subcutaneous tissues and causes Calabar swellings, not typically lymphatic filariasis. Hence, Loa loa is the correct "not" cause.

**48.** (d) Gastrointestinal bleeding

Giardia lamblia infection often produces diarrhea (which can be acute or chronic), malabsorption, and steatorrhea (fatty stools). Patients may experience weight loss and overall ill health. Frank gastrointestinal bleeding, however, is uncharacteristic of giardiasis. Although there may be mucosal irritation, significant bleeding is not a typical feature of this protozoal infection, making GI bleeding the "except."

**49.** (c) 2 and 4 only (Primaquine and Mefloquine)

Primaquine is contraindicated in pregnancy because of the risk of hemolysis in the fetus (whose G6PD status cannot be determined). Mefloquine, although sometimes used in later pregnancy, has typically been considered unsafe or best avoided in early pregnancy by older guidelines. By contrast, chloroquine and quinine are acceptable in most pregnancy settings for malaria. Hence, among the listed choices, primaquine and mefloquine are the ones that "should not be used" in a pregnant patient.

**50.** (c) Human cysticercosis is transmitted by the ingestion of ova.

Human cysticercosis arises when a person ingests Taenia solium eggs (ova), typically from fecal contamination. The oncospheres hatch and migrate to tissues (brain, muscle, etc.) to form cysticerci. The parasite is Taenia solium, not Echinococcus granulosus (which causes hydatid cysts). While humans can be a definitive host for the adult tapeworm in the intestine, in cysticercosis specifically humans act as the intermediate host after ingesting eggs. Levamisole is not the primary therapy (albendazole ± steroids is standard).

**51.** (d) 1, 2 and 3

Plasmapheresis (plasma exchange) removes pathogenic autoantibodies or immune complexes from circulation. In Goodpasture's syndrome, it helps remove anti–glomerular basement membrane antibodies. In Myasthenia gravis, it temporarily reduces anti–acetylcholine receptor or anti–MuSK antibodies, improving muscle strength. In Guillain-Barré syndrome, particularly severe cases, plasmapheresis (or

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later stages of fetal lung maturity, but it is not the principal constituent. Phosphatidyl choline (particularly dipalmitoyl) is the key molecule that reduces alveolar surface tension.

**80.** (d) Hemorrhagic disease of the newborn

Hemorrhagic disease of the newborn (now commonly called vitamin K deficiency bleeding) typically presents around day 2–7 of life with signs of bleeding (e.g., GI bleeding). The baby here is otherwise well, with a normal platelet count and no other bleeding lesions, which points away from disseminated intravascular coagulation or severe platelet disorders. Haemolytic disease of the newborn would involve hemolysis and jaundice, not isolated GI bleeding. Von Willebrand disease at this age would be extremely unusual.

**81.** (b) Molar

The first permanent tooth in children is usually the first permanent molar ("6-year molar"), which tends to erupt at about age six. The incisors follow later, but deciduous (milk) incisors appear in toddlerhood. Canines and premolars also come later in the mixed dentition period. Hence the first permanent tooth to typically erupt is the permanent first molar behind the last deciduous molar.

**82.** (c) Osteogenesis imperfecta

Osteogenesis imperfecta (OI) is a collagen synthesis defect (usually type I collagen) leading to brittle bones that fracture easily, often with minimal trauma. Infants may present with multiple fractures in different stages of healing, and other features can include blue sclera, hearing loss, and dental fragility. Osteomalacia or rickets in neonates does not typically feature multiple fractures that have already healed. Osteopetrosis ("marble bone disease") causes abnormally dense bones prone to other complications but not frequent fractures in this pattern.

**83.** (d) Respiratory rate

The Apgar score is assessed at 1 minute and 5 minutes after birth, evaluating 1) Appearance (color), 2) Pulse (heart rate), 3) Grimace/ response to stimulation (reflex irritability), 4) Activity (muscle tone), and 5) Respiration (respiratory effort). It does not specifically measure "respiratory rate," but rather whether the baby is crying vigorously, breathing well, or having weak or absent respiratory effort. Thus, "respiratory rate" is not named as an Apgar component, making it the best "except."

**84.** (d) Carditis

The major Jones criteria for acute rheumatic fever are: carditis, polyarthritis, chorea, erythema marginatum, and subcutaneous nodules. Elevated ESR/CRP, prolonged PR interval, and elevated or rising antistreptolysin O (ASO) titers are considered minor or supportive findings—though they help confirm recent streptococcal infection and overall suspicion. Carditis is a definitive major manifestation and can present as valvulitis, myocarditis, or pericarditis.

**85.** (b) Low $T_3$, low $T_4$, high TSH

Primary hypothyroidism is characterized by inadequate production of thyroid hormones ($T_4$, $T_3$) by the thyroid gland. Because the feedback loop sees low circulating $T_4/T_3$, the pituitary responds by raising TSH levels in an attempt to stimulate the thyroid. Thus, $T_4$ and $T_3$ are low, TSH is high. In secondary (pituitary) or tertiary (hypothalamic) hypothyroidism, TSH can be normal or low, but that is not the case here.

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**86.** (d) The seizures are followed by Todd's paralysis

Simple febrile seizures typically affect children 6 months to 5 or 6 years old, last less than 15 (to 30) minutes, and are usually generalized. They tend to occur when fever rises quickly. Todd's paralysis (a transient focal neurological deficit after a seizure) is more characteristic of epileptic or complex seizures rather than simple febrile seizures. Hence, postictal Todd's paralysis is not a typical feature of simple febrile convulsions.

**87.** (d) Enalapril

ACE inhibitors reduce the conversion of angiotensin I to angiotensin II, lowering blood pressure and reducing aldosterone-mediated fluid retention. Enalapril, captopril, and lisinopril are classic examples. Atenolol

common in the population, but specifically with rubella, PDA is most strongly linked.

**73.** (b) Bronchiolitis

Bronchiolitis most commonly affects infants and young toddlers (especially under 2 years), presenting with mild fever, cough, tachypnea, wheezing, and hyperinflation on chest X-ray. Respiratory syncytial virus (RSV) is a classic cause. The infant here is not severely toxic, has bilateral wheeze, and hyperinflation—classic for bronchiolitis. Laryngotracheobronchitis (croup) typically presents with a barking cough and stridor. Endobronchial TB is less likely with just two days of mild illness. Asthma is less commonly diagnosed this early without prior episodes.

**74.** (c) Laryngomalacia

Laryngomalacia is the most common cause of persistent stridor beginning in early infancy (often noted within the first two weeks of life). It results from congenital floppiness of the supraglottic structures that collapse inward during inspiration, producing a characteristic inspiratory stridor. Croup (laryngotracheobronchitis) presents more acutely, typically later in infancy. Tracheoesophageal fistula usually manifests with feeding difficulties and choking from birth. Eventration of the diaphragm causes respiratory distress but not the typical inspiratory stridor of laryngomalacia.

**75.** (b) Morphine, Soda-bicarb and Propranolol

During "Tet spells" or hypercyanotic episodes in Tetralogy of Fallot, key acute measures include supplemental oxygen, knee-chest positioning, morphine (to reduce respiratory drive and calm the child), sodium bicarbonate if acidosis is present, and a beta-blocker such as propranolol to decrease infundibular spasm. These measures help reduce right-to-left shunting and improve pulmonary blood flow. Digoxin and diuretics are not mainstays of managing acute "Tet spells," although they may be used for other cardiac issues.

**76.** (b) Henoch-Schönlein purpura

Henoch-Schönlein purpura (HSP) is characterized by a tetrad of palpable purpura (often on the buttocks/legs), arthritis/arthralgias, abdominal pain, and renal involvement (hematuria). Fever may be absent. This condition arises from IgA-mediated small-vessel vasculitis. By contrast, meningococcal meningitis presents with fever and possible petechial rash, ITP typically shows isolated thrombocytopenia without prominent joint/abdominal symptoms, and haemolytic uraemic syndrome involves microangiopathic hemolytic anemia, thrombocytopenia, and renal failure rather than classic purpura on the legs.

**77.** (b) 1 and 2 only

Haemolytic uraemic syndrome (HUS) typically presents with a triad: microangiopathic haemolytic anaemia (showing fragmented RBCs such as "helmet cells"/schistocytes), thrombocytopenia, and acute renal failure. The Coombs' test is usually negative, because the RBC destruction is mechanical rather than immune-mediated. Hence 3 ("Positive Coombs' test") does not apply. Therefore, the correct features are 1 and 2 but not 3.

**78.** (c) Renal vein thrombosis

Severe dehydration can predispose to thrombosis due to increased blood viscosity and decreased renal perfusion. In a young child, acute renal vein thrombosis often presents with flank mass, hematuria, and sometimes thrombocytopenia. Wilms' tumor (nephroblastoma) typically presents more gradually with an asymptomatic abdominal mass. HUS more often features microangiopathic hemolysis and thrombocytopenia as the main clues. Hydronephrosis would typically cause distension, not sudden gross hematuria plus an acute flank mass.

**79.** (d) Phosphatidyl choline

Pulmonary surfactant is primarily composed of phospholipids (about 80%), proteins (surfactant-associated proteins), and neutral lipids. The most abundant single phospholipid is dipalmitoyl phosphatidylcholine (also called lecithin). Phosphatidyl glycerol does appear in

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**95.** (c) A-4 B-3 C-2 D-1 (Tea → Tamil Nadu, Jute → Orissa, Rubber → Kerala, Tobacco → Andhra Pradesh)

1. Tea (A): Tamil Nadu is a major tea producer in the southern region (Nilgiris, etc.), so A→4.
2. Jute (B): Although West Bengal is top in India, among these options Orissa also produces jute, so B→3.
3. Rubber (C): Kerala leads in rubber production, so C→2.
4. Tobacco (D): Andhra Pradesh is known for significant tobacco production, so D→1.

**96.** (d) A-3 B-1 C-4 D-2 (Chilika → Orissa, Kolleru → Andhra Pradesh, Sambhar → Rajasthan, Vembanad → Kerala)

Chilika Lake (A) is in Orissa (3).

1. Kolleru Lake (B) lies between Krishna and Godavari deltas in Andhra Pradesh (1).
2. Sambhar Lake (C) is India's largest inland salt lake, located in Rajasthan (4).
3. Vembanad Lake (D) is in Kerala (2).

**97.** (a) Ganga

By common convention, the Ganga is considered the longest river flowing entirely within India. Although the Brahmaputra may have a greater total length (counting its course through Tibet/China and Bangladesh), inside India's borders the Ganga's stretch is the longest. Jamuna (Yamuna) is a major tributary of the Ganga, and the Sutlej is a tributary of the Indus system. Thus, from India's perspective, the Ganga is recognized as the country's longest river.

**98.** (c) Jeevaka

Ancient Buddhist texts mention Jīvaka (also spelled "Jeevaka") as the personal physician to Gautam Buddha. While Sushruta and Charak are greatly respected figures in classical Indian medicine, neither is specifically recorded as Buddha's physician. Nagarjuna was a famous Buddhist philosopher (and sometimes alchemist) but not Buddha's personal physician. Thus, Jīvaka is the well-attested name credited with caring for the Buddha's medical needs.

**99.** (c) Bridge the gap between the rural and urban areas and improve the quality of life of the poor

Bharat Nirman was an infrastructure-development plan focusing on six critical areas in rural India: roads, water supply, housing, electrification, irrigation, and telecommunications. Its overarching aim was to reduce the rural–urban disparity by enhancing infrastructure in villages, thereby improving the quality of life for the rural poor. Unlike purely urban or slum-centric programs, Bharat Nirman's emphasis was clearly on bridging the rural–urban divide.

**100.** (c) 2014 – 15

The National Rural Livelihood Mission (NRLM), also called Aajeevika, was launched with an ambitious goal of eliminating rural poverty by empowering poor households to access sustainable livelihood opportunities. Official policy documents around its inception aimed for significant poverty reduction within the 12th Plan period (2012–2017), often citing targets in the 2014–2015 horizon. Although implementation timelines have evolved, exam sources traditionally quote the 2014–15 target as the immediate milestone for eradicating or drastically reducing rural poverty under NRLM.

**101.** (b) Sales tax

Prior to GST, "sales tax" or "value added tax (VAT)" on goods (within a state) was the domain of State Governments. Service tax was levied by the Central Government, central excise duty was also under the center, and securities transaction tax (STT) is a central levy on transactions in securities. Although the GST regime has largely replaced many of these, historically—and in many exam contexts—sales tax (or VAT) has always been associated with State Government jurisdiction.

**102.** (c) Santhali

The 92nd Constitutional Amendment Act (2003) added four languages—Bodo, Dogri, Maithili, and Santhali—to the Eighth Schedule of the Constitution. Thus they became officially recognized Scheduled Languages of India. Manipuri, Konkani, and Kashmiri were already

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**22.** Which one of the following drugs is not recommended for treatment of invasive candidiasis in neutropenic patients ?
(a) Amphotericin-B
(b) Caspofungin
(c) Nystatin
(d) Voriconazole

**23.** What is the earliest manifestation of hypovolaemia ?
(a) Loss of skin turgor
(b) Sunken eye balls
(c) Orthostatic hypotension
(d) Decreased urine output

**24.** A 27-year-old lady presents with menorrhagia. She is worried as she has gained 12 kg weight and her hair is becoming coarse. She also complains of constipation. What is the single best test for evaluation of this patient ?
(a) Thyroid scan
(b) Serum iodine
(c) Free T4
(d) TSH

**25.** Duchenne muscular dystrophy is transmitted as
(a) X linked dominant
(b) X linked recessive
(c) Autosomal dominant
(d) Autosomal recessive

**26.** What is the treatment of choice in a patient of Haemophilia A ?
(a) Epoprostenol
(b) Oral corticosteroids
(c) Recombinant factor VIII concentrate
(d) Blood transfusion

**27.** What is the optimum duration of antibacterial treatment of acute bacterial prostatitis ?
(a) 3 days
(b) 4 – 6 weeks
(c) 7 – 14 days
(d) 2 – 14 days

**28.** Which of the following statements is not correct about monobactam aztreonam ?
(a) It has excellent anti-gram-negative antibiotic activity.
(b) It is not useful against gram-positive organisms or anaerobes.
(c) It is available as oral preparation.
(d) It is administered 12 hourly.

**29.** A blood sample from a patient with polycythemia vera is sent for complete blood count. Which of the following blood components is most likely to be reported within normal limits ?
(a) Lymphocytes
(b) Neutrophils
(c) Platelets
(d) RBCs

**30.** Polyuria in nephrogenic diabetes insipidus is improved by the following except
(a) Thiazide diuretics
(b) Amiloride
(c) Indomethacin
(d) Frusemide

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**31.** Consider the following :
1. Sulfonylureas
2. Biguanides
3. Thiazolidinediones
Which of the above is/are not recommended for use as first line therapy in type 1 diabetes mellitus ?
(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

**32.** All of the following drugs increase urinary excretion of uric acid except
(a) Acetyl salicylic acid
(b) Phenylbutazone
(c) Sulfinpyrazone
(d) Acetaminophen

**33.** In which stage of syphilis are the lesions of condyloma lata present ?
(a) Primary

1. Per capita income typically outstrips the all-India average.
2. Female literacy and general literacy rates lead the nation.
3. Road, rail, and water transport networks, plus strong health infrastructure, grant broad healthcare access.
4. Land reforms of the 1960s–70s helped reduce landlessness and empowered marginalized groups.

These factors collectively boosted Kerala's remarkable achievements in health, longevity, and human development.

**111.** (d) It is the classification of the injured on the basis of severity of injuries with the concept of treating those first who are likely to survive with medical intervention.

In a mass casualty situation, "triage" means sorting patients by the severity of their condition and the likelihood of benefit from immediate treatment. The key principle is to prioritize patients who have serious but treatable injuries—maximizing overall survival. This often means those who can be saved with prompt intervention get treated first, rather than "first come, first served" or automatically giving top priority to those most gravely injured (who may not survive even with treatment).

**112.** (d) A-3 B-2 C-4 D-1

Triage color coding in mass emergencies often follows:

1. Red = Immediate (high priority)
2. Yellow = Delayed (medium priority)
2. Green = Minor (ambulatory or "walking wounded")
3. Black = Dead or moribund (expectant category)

**113.** (b) 1, 2 and 4 only

The state emblem of India is adapted from the Lion Capital of Ashoka at Sarnath, which originally has four lions standing back to back. However, the Indian Government did not adopt this emblem on 15th August 1947; it was officially adopted on 26th January 1950. Therefore, statements 1, 2, and 4 are correct, while statement 3 is incorrect.

**114.** (d) Courage and sacrifice

India's national flag has three horizontal stripes: Saffron (top), White (middle), and Green (bottom). The official interpretation: saffron stands for the spirit of courage, sacrifice, and renunciation; the white band symbolizes peace, unity, and truth; and the green band denotes faith, fertility, and prosperity of the land. The Ashoka Chakra at the center represents righteousness and perpetual movement. Thus, "courage and sacrifice" is specifically attributed to the saffron color.

**115.** (b) June/July

Kharif crops (such as paddy, maize, and pulses) are typically sown at the onset of the Southwest Monsoon in June/July and harvested around September/October. Rabi crops, by contrast, are sown in October/November and harvested in spring. Thus, the "kharif" season is associated with India's main rainy months, making June/July the traditional sowing period for most kharif crops.

**116.** (a) Sone

The Sone (or Son) River originates near the Amarkantak plateau in Madhya Pradesh, not in the Himalayan range. Hence, it is largely rain-fed rather than perennial Himalayan snow-fed. By contrast, Jhelum, Chenab, and Sutlej rise in or near the Himalayas, receiving meltwater from glaciers and snowfields. That makes Sone the only "non-snow-fed" among these.

**117.** (b) Mahanadi

Mahanadi is an entirely separate river system rising in Chhattisgarh, flowing eastwards through Odisha into the Bay of Bengal. It does not join the Ganga. Meanwhile, the Gomti (or Gumti) joins near Kaithi (Uttar Pradesh), Alaknanda is one of the two main headstreams of the Ganga (meeting the Bhagirathi at Devprayag), and the Sone merges with the Ganga near Patna. Therefore, Mahanadi is the odd one out.

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**44.** As regards carpal tunnel syndrome, which one of the following statements is not correct ?
(a) It may occur in hypothyroidism.
(b) Pain or tingling of fingers often occurs at night.
(c) There is decreased strength of abduction, flexion and opposition of the thumb.
(d) Localised tenosynovitis of the flexor tendons of the fingers is an infrequent cause.

**45.** Match List I with List II and select the correct answer using the code given below the lists :

| | **List I (Type of antibody)** | | **List II (Disease state)** |
|---|---|---|---|
| A | Anti ds DNA | 1 | Drug induced lupus |
| B | Anti RNP | 2 | Crest syndrome |
| C | Anti Histone | 3 | S.L.E |
| D | Anti Centromere | 4 | MCTD |

Code :
(a) A-2 B-4 C-1 D-3
(b) A-2 B-1 C-4 D-3
(c) A-3 B-4 C-1 D-2
(d) A-3 B-1 C-4 D-2

**46.** A young adult presents in emergency room with acute onset of dysphagia, bilateral ptosis and generalized muscle weakness. What is the most likely possibility?
(a) Thyrotoxic myopathy
(b) Myasthenia gravis
(c) Muscular dystrophy
(d) Hypokalaemic periodic paralysis

**47.** The following are the features of schizophrenia except
(a) Delusions
(b) Loosening of associations
(c) Flight of ideas
(d) Hallucinations

**48.** Match List I with List II and select the correct answer using the code given below the lists :

| | **List I (Anti psychotic agent)** | | **List II (Side effect)** |
|---|---|---|---|
| A | Thioridazine | 1 | Pigmentary retinopathy |
| B | Clozapine | 2 | Somnolence |
| C | Olanzapine | 3 | Akthisia |
| D | Haloperidol | 4 | Agranulocytosis |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-1 B-4 C-2 D-3

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**49.** Match List I with List II and select the correct answer using the code given below the lists :

| | **List I (Disease)** | | **List II (Drug)** |
|---|---|---|---|
| A | Bipolar disorder | 1 | Clomipramine |
| B | Major depression | 2 | Clozapine |
| C | Schizophrenia | 3 | Venlafaxine |
| D | Obsessive compulsive disorder | 4 | Lithium |

(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-3 C-2 D-1
(d) A-3 B-1 C-2 D-4

**50.** The tumour suppressor gene that is inactivated in over 50% of human tumours including breast and colon carcinomas and childhood leukaemias is
(a) p Rb
(b) STK 11
(c) p 53
(d) VHL

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included earlier. Among the listed options, Santhali is the language newly added by that amendment.

**103.** (a) A-1 B-2 C-3 D-4

Silent Valley National Park is in Kerala (A → 1).

1. Kaziranga National Park is famous for one-horned rhinoceroses in Assam (B → 2).
2. Dudhwa (or Dudwa) National Park is in Uttar Pradesh (C → 3).
3. Sariska Tiger Reserve is in Rajasthan (D → 4).

Hence, the correct mapping is A→1, B→2, C→3, D→4.

**104.** (d) Russia

Originally, the Chandrayaan-2 mission (approved in 2008) was a collaborative project between ISRO and Russia's space agency, Roscosmos. Russia was to provide the lander, while ISRO built the orbiter and rover. Though Russia later encountered delays and technical issues, prompting ISRO to develop the lander largely in-house, the official partnership in the early phase was with Russia. Thus, at the time of forming exam questions, "Russia" was acknowledged as India's partner for Chandrayaan-2.

**105.** (d) Promote energy efficiency as a core component of urban planning

Under India's National Action Plan on Climate Change, the "National Mission on Sustainable Habitat" focuses on urban areas—improving energy efficiency in buildings, managing solid waste and water resources, and encouraging sustainable transport. Its core is to make cities more climate-friendly and resource-efficient. Afforestation is part of the "Green India Mission," while climate-resistant crops fall under the "National Mission on Sustainable Agriculture." Land-use change is broader than the scope of the "Sustainable Habitat" mission.

**106.** (d) 1 tonne of $CO_2$ reduction

Under the Kyoto Protocol, a Certified Emission Reduction (CER) is a tradable certificate corresponding to the reduction of one metric tonne of $CO_2$-equivalent ($CO_2e$) greenhouse gas emissions. Companies or nations can earn CERs by undertaking emissions-reducing projects, and these credits can be traded to offset emissions elsewhere. In short, 1 CER = 1 tonne of carbon dioxide (or $CO_2$-equivalent) reduced.

**107.** (d) Lycopene

Tomatoes are well-known for their high lycopene content, a red carotenoid pigment credited with antioxidant properties potentially beneficial for cardiovascular health and certain cancer risk reduction. Allicin is abundant in garlic, curcumin in turmeric, and lignans in seeds like flaxseed. Lycopene is specifically associated with the red color of tomatoes, watermelon, pink guava, and related foods.

**108.** (a) 1, 2 and 3 only

UNDP's Human Poverty Index-1 (HPI-1) for developing countries tracks deprivations in three dimensions:

1. Survival (probability of not surviving to age 40, i.e., vulnerability to early death)
2. Knowledge (adult illiteracy rate)
3. Basic living standards (including % of population without access to safe water or health services, or underweight children).

The percentage of families having water-seal toilets is not among the classic HPI-1 variables. Thus, items (1), (2), and (3) match the standard HPI-1 criteria.

**109.** (b) It also captures the Social Exclusion

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HPI-2 is the version of the Human Poverty Index adapted for selected high-income (developed) OECD countries. While HPI-1 focuses on basic dimensions—longevity, literacy, and access to basic services—HPI-2 adds "social exclusion" (long-term unemployment, for instance) as a fourth dimension. This specifically addresses issues faced in more industrialized contexts. Thus, HPI-2 differs mainly by capturing aspects of social exclusion, rather than purely financial inclusion or geriatric/occupational factors.

**110.** (c) 1, 2, 3 and 4

Kerala outperforms many Indian states on socio-economic indicators:

(c) New onset confusion or impaired level of consciousness
(d) Hypoxemia PaO2 < 60 mm Hg

10. Consuming which of the following food products is most associated with Escherichia coli type 0157 infection ?
(a) Eggs
(b) Poultry
(c) Beef
(d) Soft cheese

11. Which one of the following organisms is not included in HACEK group ?
(a) Actinobacillus actinomycetemcomitans
(b) Corynebacterium jeikeium
(c) Haemophilus sp.
(d) Kingella kingae

12. The clinical features of congenital syphilis in neonatal period include the following except
(a) Interstitial keratitis
(b) Choroiditis
(c) Meningitis
(d) Osteochondritis

13. Which of the following diseases is not caused by Spirochetes ?
(a) Human leptospirosis
(b) Pinta
(c) Relapsing fever
(d) Undulant fever

14. A young male develops febrile illness with severe muscle pains one week after prolonged swimming in fresh water. It is associated with deep jaundice, haemorrhages and renal failure. What is the most likely diagnosis ?
(a) Dengue fever
(b) Falciparum malaria
(c) Acute Hepatitis E infection
(d) Leptospirosis

15. Which of the following is not a Spirochete ?
(a) Borrelia
(b) Legionella
(c) Leptospira
(d) Treponema

16. Neurocysticercosis is caused by
(a) Adult form of Taenia solium
(b) Larval form of Taenia solium
(c) Adult form of Taenia saginata
(d) Larval form of Taenia saginata

17. The following are the WHO criteria for diagnosis of severe malaria except
(a) Temperature 39° C
(b) Severe normocytic anaemia (Hb < 5 g/dl)
(c) Hypoglycemia
(d) Metabolic acidosis

18. Which of the following has the best sensitivity and specificity for diagnosis of visceral leishmaniasis ?
(a) Direct agglutination test
(b) Latex agglutination test
(c) Strip test for recombinant $K_{39}$ antigen
(d) Fluorescent dye tagged antibodies

19. Which of the following is the drug of choice for the treatment of all forms of Schistosomiasis ?
(a) Niclosamide
(b) Ivermectin
(c) Albendazole
(d) Praziquantel

20. Which of the following organisms causes lymphatic filariasis ?
(a) Brugia timori
(b) Loa loa
(c) Mansonella perstans
(d) Onchocerca volvulus

21. Allergic bronchopulmonary aspergillosis is a condition which often occurs in patients with pre-existing
(a) Adeno-carcinoma lung
(b) Pulmonary tuberculosis
(c) Bronchial asthma
(d) Sarcoidosis

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**118.** (a) Infrared radiation

Ionizing radiation has enough energy to knock electrons off atoms or molecules, creating ions. X-rays, gamma rays, and cosmic rays all have high frequency (short wavelength) and sufficient photon energy to be ionizing. Infrared radiation, however, is a lower-frequency, longer-wavelength form of electromagnetic radiation that lacks the energy needed to ionize atoms. Infrared mainly transfers heat rather than causing ionization.

**119.** (d) 85 dB

Generally, occupational noise exposure guidelines (e.g., by OSHA) indicate that 85 decibels (dB) over an 8-hour workday is the threshold above which permanent hearing damage risk rises significantly. Lower levels (25–65 dB) are typical of everyday ambient noise and usually do not cause hearing loss unless exposure is extremely prolonged or the decibels spike. Hence, 85 dB is often cited as the maximum "safe" daily exposure limit for standard durations.

**120.** (d) Dolphin

India declared the river dolphin (specifically the Ganges River Dolphin, Platanista gangetica) as its National Aquatic Animal in 2009. This freshwater dolphin inhabits the Ganges–Brahmaputra–Meghna river system. Saltwater crocodiles, sea turtles, and dugongs (sea cows) are important aquatic creatures but have not been designated as the National Aquatic Animal. The Ganges Dolphin is also a key indicator species for river ecosystem health.

END

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(b) Secondary
(c) Tertiary
(d) Congenital

34. Wernicke's encephalopathy consists of
(a) Mental impairment, ophthalmoplegia and cerebellar ataxia
(b) Delirium, facial palsy and cerebellar ataxia
(c) Ophthalmoplegia, hearing loss and ataxia
(d) Ophthalmoplegia, facial palsy and ataxia

35. With reference to Vitamin $B_6$, consider the following statements :
1. It is a cofactor for metabolism of many amino acids.
2. Its active form in humans is pyridoxal 5-phosphate.
Which of the statements given above is/are correct ?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

36. A cystic boggy inflammatory swelling over scalp in a child with partial or complete alopecia is called
(a) Folliculitis decalvans
(b) Haematoma
(c) Kerion
(d) Congenital syphilis

37. The earliest sensation to be lost in leprosy is
(a) Thermal
(b) Tactile
(c) Pain
(d) Vibration

38. What is the causative virus for common wart ?
(a) Human papilloma virus
(b) Cytomegalovirus
(c) Human immunodeficiency virus
(d) Herpes virus

39. Wood's lamp is helpful in recognition of 'ash leaf' spots in patients with
(a) Atopic dermatitis
(b) Lichen planus
(c) Nummular eczema
(d) Tuberous sclerosis

40. A patient with HIV-AIDS on treatment for tubercular lymphadenitis develops a gross increase in the size of lymph nodes after receiving antiretroviral therapy for four weeks. Laboratory tests show a doubling of his CD4 count. What is the most likely reason for this ?
(a) Multi-drug persistent TB
(b) Drug defaulter for anti TB drugs
(c) Immune reconstitution inflammatory syndrome
(d) Poor compliance for antiretroviral therapy

41. Which one of the following is the most appropriate treatment of overdose of aspirin ingestion ?
(a) Acetazolamide
(b) Sodium bi-carbonate
(c) Allopurinol
(d) N-acetyl cysteine

42. A homogenous white non-inflammatory discharge that smoothly coats the vaginal walls and vestibules with positive Amsler's criterion is characteristic of
(a) Candida albicans
(b) Trichomonas vaginalis
(c) Gardnerella vaginalis
(d) Niesseria gonorrhoea

NODIA

43. A 21-year-old man presents with recurrent episodes of intensely pruritic vesicles symmetrically distributed over the trunk. On electron microscopy, granular deposition of IgA and complement is noted at the mucoepidermal junction. Which of the following underlying conditions predisposes patients to the described skin disorder ?
(a) Celiac sprue
(b) Lactase deficiency
(c) Whipple's disease
(d) Ulcerative colitis

# QUESTION PAPER 2010

1. A young college student having regular heart rate of 172 beats per minute attends OPD for uneasy sensation in chest. Carotid sinus pressure brings down the heart rate to 72 per minute. What is the most likely diagnosis ?
   (a) Ventricular tachycardia
   (b) Atrial fibrillation
   (c) Sinus arrhythmia
   (d) Paroxysmal supraventricular tachycardia

2. A 66-year-old lady presents to emergency with 2 episodes of vomiting. Her ECG shows elevation of ST segment in inferior leads. Her BP is 80 mm systolic. The best way to start correcting her BP is
   (a) Immediate Thrombolysis
   (b) Rescue PTCA
   (c) Normal saline infusion
   (d) Dopamine infusion

3. A 15-year-old boy is brought to the emergency room by the class teacher from the chemistry laboratory. The boy is an atopic individual with pulse rate of 116/minute regular, unable to speak in sentences and ABG shows severe hypoxaemia. What is the probable diagnosis ?
   (a) Acute bacterial pneumonia
   (b) Acute severe asthma
   (c) Acute pleurisy
   (d) Tension pneumothorax

4. A 45-year-old man presented with regurgitated food particles eaten several days earlier. He has foul smelling breath and occasional dysphagia for solid food. What is the probable diagnosis ?
   (a) Gastric outlet obstruction
   (b) Zenker's diverticulum
   (c) Scleroderma
   (d) Diabetic gastroparesis

5. Which one of the following bacteria almost never cause cavities in the lungs ?
   (a) Staphylococcus aureus
   (b) Pseudomonas aeruginosa
   (c) Actinomyces
   (d) Haemophilus influenzae

6. A 24-year-old woman with the history of ulcerative colitis presented with progressive jaundice associated with pruritus and intermittent right upper quadrant abdominal pain. What would be the most likely ERCP finding ?
   (a) Normal finding
   (b) Diffuse strictures of common bile duct
   (c) Malignant strictures of common bile duct
   (d) Stones

7. Early recurrent falls in elderly with ophthalmoplegia suggests the possibility of
   (a) Huntington's chorea
   (b) Parkinson's disease
   (c) Shy-Drager syndrome
   (d) Progressive supra nuclear palsy

8. Consider the following :
   1. Amyloidosis
   2. Heavy metal poisoning
   3. Renal transplant rejection
   4. Hyperparathyroidism

   Select the correct answer using the code given below:
   (a) 1, 3 and 4
   (b) 1 and 2 only
   (c) 1, 2 and 3
   (d) 2, 3 and 4

9. Criteria for hospital admission of an adult with community acquired pneumonia includes all except :
   (a) Respiratory rate 28/min
   (b) Total leukocyte count 11,000/cu mm

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**51.** A 70-year-old man presents with difficulty in finding ways around his neighbourhood. His wife says he has become forgetful and cannot manage money. He has difficulty in naming his relatives. Clinical examination reveals ideomotor apraxia and memory impairment. The available drugs to manage this condition usually target which one of the following neurotransmitters ?
(a) Serotonin
(b) Histamine
(c) Acetylcholine
(d) Dopamine

**52.** The clinical finding in trisomy 21 includes the following except
(a) Growth failure
(b) Intestinal stenosis
(c) Mental retardation
(d) Brachydactyly

**53.** Which one of the following is not an example of point mutation ?
(a) Haemochromatosis
(b) Hereditary motor and sensory neuropathy type 1
(c) Achondroplasia
(d) α-1 antitrypsin deficiency

**54.** Match List I with List II and select the correct answer using the code given below the lists :

| | **List I (Arrhythmias)** | | **List II (Causative drugs)** |
|---|---|---|---|
| A | Atrio-ventricular block | 1 | Phenothiazine |
| B | Sinus tachycardia | 2 | Beta blockers |
| C | Wide QRS | 3 | Terfenadine |
| D | QT interval prolongation | 4 | Theophylline |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-1 B-4 C-2 D-3
(c) A-4 B-1 C-2 D-3
(d) A-2 B-4 C-1 D-3

**55.** The pupils of a patient would be pinpoint in poisoning with the following agents except
(a) Carbamates
(b) Phenothiazines
(c) Barbiturates
(d) Opioids

**56.** The intermediate syndrome in organophosphate poisoning refers to the occurrence of which of the following ?
(a) Cholinergic syndrome with hyper-secretion
(b) Organophosphate induced polyneuropathy
(c) Organophosphate induced delayed neuropathy
(d) Cranial nerve and brain stem lesions

**57.** As regards the treatment of poisoning, activated charcoal is useful in the following except
(a) Carbamazepine
(b) Dapsone
(c) Quinine
(d) Lithium

**58.** Which of the following CD phenotypes is expressed by the killer T cells which are responsible for defence against intracellular pathogens ?
(a) CD2
(b) CD5
(c) CD8
(d) CD10

**59.** What is the risk of reactivating latent tuberculosis infection in a patient having HIV infection ?
(a) 2 - 5%
(b) 7 - 10%
(c) 12 - 15%
(d) < 1%

NODIA

**60.** The immunoglobulin which passes through placenta and gives immunity to newborns is
(a) IgM
(b) IgA
(c) IgG
(d) IgE

**105.** Recently, a team of scientists used a strain of a bacterium called Wolbachia pipientis to infect Aedes aegypti in an effort to reduce the mosquito's life span. In which one of the following countries was this done?
(a) Australia
(b) China
(c) India
(d) Japan

**106.** The Spitzer Space Telescope belongs to
(a) European Space Agency
(b) Indian Space Research Organization
(c) National Aeronautics and Space Administration
(d) Western European Union

**107.** With reference to recent research in stem cells, consider the following statements :
1. The umbilical cord tissue is rich in mesenchymal stem cells.
2. Mesenchymal stem cells are found in bone marrow also.
Which of the statements given above is/are correct ?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**108.** What is KG-D6 frequently in national news in the recent past ?
(a) Name of a software for e-governance
(b) Name of a supercomputer
(c) Name of a hydrocarbon block
(d) Name of a mini-satellite

**109.** Consider the following statements :
1. In India, Prevention of Food Adulteration Act was enacted in 1972.
2. Under the Prevention of Food Adulteration Act, a penalty of life imprisonment can be imposed in certain offences.
Which of the statements given above is/are correct ?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**110.** Among the following countries, which one launched its first indigenous satellite in the recent past ?
(a) Egypt
(b) Iran
(c) Saudi Arabia
(d) Libya

**111.** With reference to the Pill Camera which is a step further in endoscopy, consider the following statements :
1. Pill camera can be steered by doctors from outside the body through patient's skin via a magnetic device.
2. Pill Camera can take 12 images per second.
Which of the statements given above is/are correct ?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**112.** In India, who is the head of the National Disaster Management Authority ?
(a) Secretary of the Union Ministry of Health and Family Welfare
(b) Director General of Health Services, Government of India
(c) Union Minister of Health and Family Welfare
(d) Prime Minister

**113.** In India, what is the contribution of agriculture and allied sectors to Gross Domestic Product (GDP)?
(a) Less than 30%
(b) 30 to 35%
(c) 35 to 40%
(d) More than 40%

**114.** Which one of the following countries has the largest livestock population in the world ?
(a) China
(b) India
(c) Indonesia

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(b) Prolonged QT interval
(c) ST-T wave changes
(d) Sinus bradycardia

**73.** An 8-month-old female child presented to emergency with a heart rate of 220/minute and features of congestive heart failure. Her heart rate comes down to normal after administering intravenous adenosine. What is the most likely diagnosis?
(a) Atrial fibrillation
(b) Atrial flutter
(c) Paroxysmal supraventricular tachycardia
(d) Ventricular tachycardia

**74.** A newborn infant was referred with intermittent cyanosis which improved on crying but worsened when quiet. What is the most likely diagnosis?
(a) Diaphragmatic hernia
(b) Congenital heart disease (Cyanotic)
(c) Choanal atresia
(d) Tracheal agenesis

**75.** What is the correct composition (per litre) of WHO Reduced Osmolarity ORS?
(a) NaCl 2·29 g; KCl 1·1 g; Glucose 13·1 g; Citrate 2·5 g
(b) NaCl 2·49 g; KCl 1·3 g; Glucose 13·3 g; Citrate 2·7 g
(c) NaCl 2·69 g; KCl 1·5 g; Glucose 13·5 g; Citrate 2·9 g
(d) NaCl 2·89 g; KCl 1·7 g; Glucose 13·7 g; Citrate 3·1 g

**76.** Which one of the following is not a feature of Turner's syndrome?
(a) Webbed neck
(b) Horse-shoe kidney
(c) Coarctation of aorta
(d) Mental retardation

**77.** The following is usually the first sign of puberty in girls:
(a) Onset of menstruation
(b) Appearance of pubic hair
(c) Change in voice
(d) Increase in breast size

**78.** Guthrie test can be used for the diagnosis of
(a) Tyrosinemia
(b) Galactosemia
(c) Alcaptonuria
(d) Phenylketonuria

**79.** A one-week-old male newborn suddenly presents with lethargy, poor oral intake and features of shock. Investigations reveal hyperkalaemia, hyponatraemia and hypoglycaemia. What is the most likely diagnosis?
(a) Syndrome of inappropriate ADH secretion
(b) Gram negative sepsis
(c) Congenital adrenal hyperplasia
(d) Phenylketonuria

NODIA

**80.** Which one of the following statements is not correct regarding juvenile rheumatoid arthritis?
(a) The disease begins below 16 years of age
(b) Systemic disease (Still's disease) is the common presentation
(c) Uveitis can be asymptomatic
(d) Course of the disease has no association with uveitis

**81.** Acrodermatitis enteropathica is associated with the deficiency of
(a) Copper
(b) Cobalt
(c) Chromium
(d) Zinc

**82.** Following genetic disorders are inherited as autosomal dominant except
(a) Achondroplasia
(b) Neurofibromatosis
(c) Marfan syndrome
(d) Cystic fibrosis

**83.** Red current jelly stool in an infant is characteristic of
(a) Acute gastroenteritis
(b) Rectal piles
(c) Intussusception

(d) Fissure-in-ano

**84.** Chloroma is a feature of
(a) Burkitt's lymphoma
(b) Acute lymphoblastic leukaemia
(c) Acute myeloid leukaemia
(d) Ewing's sarcoma

**85.** Wilms' tumor is associated with the following except
(a) Aniridia
(b) Horse-shoe kidney
(c) Hemihypertrophy
(d) Opsoclonus

**86.** Consider the following statements: Antidotes now considered obsolete include the following:
1. Universal antidote for ingested poisons
2. Flumazenil for benzodiazepines
3. Acetylcysteine for paracetamol
4. Pyridoxine for isoniazid

Which of the statements given above is/are correct?
(a) 1 only
(b) 1 and 2 only
(c) 3 and 4 only
(d) 1, 2, 3 and 4

**87.** Lutembacher's syndrome comprises of
(a) Ventricular septal defect with aortic stenosis
(b) Ruptured sinus of valsalva aneurysm
(c) Atrial septal defect with mitral stenosis
(d) Complete common atrioventricular canal

**88.** Phlyctenular conjunctivitis is associated with
(a) Tuberculosis
(b) Syphilis
(c) Stevens Johnson syndrome
(d) Leprosy

**89.** What is the most frequent causative agent for acute epiglottitis in children under 5 years of age?
(a) Haemophilus influenzae type B
(b) Influenza virus type A
(c) Para influenza virus type 1
(d) Staphylococcus aureus

**90.** A 4-year-old child is admitted with fever, non-purulent conjunctivitis, rashes, cervical lymphadenopathy, hepatomegaly and desquamation of fingers and toes. Echocardiography shows coronary artery aneurysm. What is the most likely diagnosis?
(a) Measles
(b) German measles
(c) Progeria
(d) Kawasaki disease

**91.** In which one of the following states of India is the floating National Park located?
(a) Chhattisgarh
(b) Madhya Pradesh
(c) Manipur
(d) Meghalaya

**92.** Which one of the following is the first multipurpose river project of India?
(a) Bhakra Nangal Project
(b) Damodar Valley Corporation
(c) Farakka Barrage
(d) Nagarjuna Sagar Project

**93.** Which one of the following is a UNESCO World Heritage Site?
(a) Bhitarkanika
(b) Hampi
(c) Pachmarhi
(d) Shravanabelagola

**94.** From the surface of the Earth, Ozone is found in the atmosphere mostly between
(a) 2 km and 5 km
(b) 10 km and 15 km
(c) 20 km and 50 km
(d) 60 km and 100 km

**95.** The President of India is elected by the members of an electoral college which does not include
(a) the elected members of the State Assemblies

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(b) the elected members of the State Legislative Councils
(c) the elected members of the Lok Sabha
(d) the elected members of the Rajya Sabha

**96.** Consider the following statements :
1. The Secretary of the Planning Commission of India is also the Secretary of the National Development Council.
2. The Chairman of the Rajya Sabha is also the ex-officio Chairman of the Planning Commission.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**97.** Match List I with List II and select the correct answer using the code given below the lists :

| | **List I (Location of Nuclear Power Reactor)** | | **List II (State)** |
|---|---|---|---|
| A | Kaiga | 1 | Gujarat |
| B | Kakrapar | 2 | Karnataka |
| C | Narora | 3 | Rajasthan |
| D | Rawatbhata | 4 | Uttar Pradesh |

(a) A-1 B-3 C-2 D-4
(b) A-2 B-1 C-4 D-4
(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-2 D-4

**98.** Which one of the following is used in preparing the Kargasok tea?
(a) Bacterium
(b) Fungus
(c) Insect larva
(d) Latex of a plant

**99.** Consider the following statements with reference to National Rural Health Mission :
The 'Asha' helps in
1. Using pregnancy test kits for early detection of pregnancy.
2. Providing information on nutrition and immunization.

Which of the statements given above is/are correct ?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**100.** Among the following states, which one has the lowest density of population as per 2001 census ?
(a) Arunachal Pradesh
(b) Chhattisgarh
(c) Meghalaya
(d) Sikkim

**101.** Which one of the following rivers of India is well known for the presence of dolphins ?
(a) Brahmaputra
(b) Ganga
(c) Godavari
(d) Narmada

**102.** Lead Chromate is used as an adulterant in
(a) Black pepper
(b) Chilli powder
(c) Turmeric powder
(d) Wheat flour

**103.** Which one among the following is used for the preservation of fruit juices ?
(a) Ethylene dibromide
(b) Sodium thiosulphate
(c) Sodium benzoate
(d) Tartaric acid

NODIA

**104.** Aflatoxin is produced as a result of the growth of
(a) Alga
(b) Bacterium
(c) Fungus
(d) Protozoan

**61.** Intravenous immunoglobulin therapy is indicated in the following conditions except
(a) Idiopathic thrombocytopenic purpura
(b) Severe rheumatoid arthritis
(c) Guillain Barré syndrome
(d) Dermatomyositis

**62.** Binding to which of the following complements links the innate and adaptive immune systems for activation of the classic complement pathway?
(a) C1q
(b) C3b
(c) C3
(d) C5a

**63.** In a case of undifferentiated arthritis, presence of anti-cyclic citrullinated peptide (anti CCP) indicates strong possibility of which of the following ?
(a) Rheumatoid arthritis
(b) Systemic lupus erythematosis
(c) Mixed connective tissue disorder
(d) Reactive arthritis

**64.** C-reactive protein is increased in the following except
(a) Crohn's disease
(b) Systemic vasculitis
(c) Multiple myeloma
(d) Giant cell arteritis

**65.** Which of the following regimens is best for the pre-operative management of a patient with pheochromocytoma ?
(a) Propranolol alone
(b) Propranolol followed by phenoxy-benzamine
(c) Prazosin
(d) Phenoxy-benzamine followed by propranolol

**66.** Digitalis glycosides enhance myocardial contractility primarily by which one of the following mechanisms?
(a) Opening of calcium channels
(b) Inhibition of membrane $Na^+$, $K^+$-ATPase
(c) Stimulation of myosin ATPase
(d) Release of calcium from the sarcoplasmic reticulum

**67.** Rifampicin can be used in the prophylaxis of which of the following diseases ?
(a) Pulmonary tuberculosis
(b) Lepromatous leprosy
(c) Pneumococcal pneumonia
(d) Meningococcal meningitis

**68.** Which one of the following is the drug of choice in the treatment of Torsades de pointes ?
(a) Magnesium sulphate
(b) Isoproterenol
(c) Procainamide
(d) Atropine

**69.** The following chemotherapeutic drugs have cardiovascular toxicity except
(a) Cyclophosphamide
(b) Doxorubicin
(c) Azathioprine
(d) Mitoxantrone

**70.** Dysphagia which is more for liquids than for solids in a 25-year-old female strongly suggests the possibility of
(a) Pseudobulbar palsy
(b) Achalasia of oesophagus
(c) Carcinoma of oesophagus
(d) Corrosive induced oesophageal stricture

**71.** A 7-year-old child with rheumatic heart disease presents with pallor, fever and a palpable spleen. The following investigations would be needed to arrive at a diagnosis except
(a) Electro-cardiogram
(b) Echocardiogram
(c) Blood culture
(d) Urine examination

**72.** An eight-year-old boy is suspected to have acute rheumatic carditis. An ECG is most likely to reveal
(a) Prolonged PR interval

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(d) USA

**115.** The National Health Policy (2002) envisages the goal of Lymphatic Filariasis Elimination from India by the year
(a) 2010
(b) 2012
(c) 2015
(d) 2018

**116.** Bhima is a tributary of the river
(a) Ganga
(b) Godavari
(c) Indus
(d) Krishna

**117.** In India, which one of the following Union Ministries is designated as the National Codex Contact Point to examine and formulate India's views on the agenda for the various meetings of Codex Alimentarius Commission that deals with International Food Standards ?
(a) Ministry of Consumer Affairs, Food and Public Distribution
(b) Ministry of Food Processing Industries
(c) Ministry of Health and Family Welfare
(d) Ministry of Science and Technology

**118.** In which of the following regions of India is the tropical rain forest found ?
(a) Eastern Ghats of South India
(b) Western Ghats of South India
(c) Satpura Hill range in Central India
(d) The junction of Vindhya and Satpura ranges

**119.** What is Bt cotton, often in the news ?
(a) Drought resistant variety of cotton developed by genetic engineering
(b) High yielding exotic variety of cotton introduced in India in the recent past
(c) Pest resistant variety of cotton developed by genetic engineering
(d) Hybrid of a long-staple cotton from America with the native variety

**120.** Consider the following pairs :
Place — River
1. Bhadrachalam — Godavari
2. Badrinath — Bhagirathi
3. Omkareshwar — Narmada
Which of the pair/pairs given above is/are correctly matched ?
(a) 1 only
(b) 2 and 3
(c) 1 and 3
(d) 1, 2 and 3

END

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# PAPER 2010 ANSWERS

NODIA

1. (d) Paroxysmal supraventricular tachycardia

Paroxysmal supraventricular tachycardia (PSVT) is characterized by an abrupt onset and offset of a rapid, regular heart rate (often 150–250 bpm). Carotid sinus massage increases vagal tone, frequently terminating or slowing PSVT dramatically—as in this case, where the rate drops from 172 to 72 bpm. Ventricular tachycardia generally does not respond so promptly, and atrial fibrillation is irregularly irregular. Sinus arrhythmia involves only slight rate variation with respiration, not a sudden drop.

2. (c) Normal saline infusion

In an inferior myocardial infarction with hypotension (BP 80 mmHg), right ventricular involvement is possible, making the heart very preload-dependent. The initial step is to restore intravascular volume. Normal saline infusion provides a rapid increase in preload, helping to correct hypotension. Although thrombolysis or PTCA may be critical for reperfusion, they do not directly address the immediate hypotension. Vasopressors like dopamine may be considered later if fluid resuscitation fails, but fluid administration is the first measure to improve BP.

3. (b) Acute severe asthma

The patient's atopic background (indicating a predisposition to allergic reactions), marked respiratory distress (cannot complete sentences), and severe hypoxemia on arterial blood gas are hallmark signs of acute severe asthma. While pneumonia might present with fever and focal findings on examination, tension pneumothorax usually shows absent breath sounds on one side and can present more acutely, and acute pleurisy alone does not usually cause such profound hypoxia. Acute severe asthma aligns best with this combination of clinical features.

4. (b) Zenker's diverticulum

Zenker's diverticulum is a pharyngoesophageal pouch where food can accumulate and be regurgitated days after ingestion. Foul-smelling breath (halitosis) results from stagnation and bacterial growth within the diverticulum, and dysphagia for solids is common. Gastric outlet obstruction or diabetic gastroparesis typically involves partially digested food and different clinical contexts. Scleroderma primarily causes dysphagia to both solids and liquids due to esophageal motility problems rather than regurgitation of old food. Thus, Zenker's diverticulum fits this presentation.

5. (d) Haemophilus influenzae

Staphylococcus aureus can produce necrotizing pneumonia and cavitations, Pseudomonas aeruginosa commonly forms cavities in immunocompromised individuals, and Actinomyces can create cavitary lesions in pulmonary infections. By contrast, Haemophilus influenzae typically manifests as bronchopneumonia or exacerbations of chronic bronchitis but very rarely forms actual cavities. Its disease course does not favor the necrosis required for significant cavity formation, making it the organism that "almost never" causes lung cavitation among these listed choices.

6. (b) Diffuse strictures of common bile duct

Ulcerative colitis is frequently associated with primary sclerosing cholangitis (PSC). PSC is characterized by a "beaded" appearance on cholangiography due to multiple strictures and dilatations in the bile ducts. Malignant strictures suggest cholangiocarcinoma, which has a different clinical context. Stones are not typical in this scenario, and a normal ERCP would not explain progressive jaundice and pruritus. Therefore, diffuse strictures in the common bile duct (and possibly intrahepatic ducts) is the classic finding.

7. (d) Progressive supra nuclear palsy

Progressive supranuclear palsy (PSP) is marked by supranuclear ophthalmoplegia (especially vertical gaze palsy) and frequent backward falls early in the disease course. Huntington's chorea features choreiform movements and psychiatric changes; Parkinson's disease usually presents with bradykinesia, rigidity, and tremor, with falls generally appearing later; Shy-Drager syndrome (multiple system atrophy) emphasizes autonomic dysfunction. The hallmark of ophthalmoplegia and repeated falls in an elderly patient best aligns with PSP.

**8.** (c) 1, 2 and 3

In proximal (Type II) Renal Tubular Acidosis, there is a defect in bicarbonate reabsorption in the proximal tubule. Established causes include amyloidosis (which infiltrates the proximal tubule), heavy metal poisoning (e.g., lead), and renal transplant rejection (which damages tubules). Hyperparathyroidism is more often linked with other renal issues (e.g., nephrocalcinosis, possible distal RTA), not primarily with proximal RTA. Therefore, the recognized causes of Type II RTA among the listed options are amyloidosis, heavy metal poisoning, and renal transplant rejection.

**9.** (b) Total leukocyte count 11,000/cu mm

Hospital admission guidelines for pneumonia generally highlight markers of severity like high respiratory rate ($\geq$30/min), confusion or altered mental status, and significant hypoxemia ($PaO_2$ <60 mmHg). A white blood cell count exceeding 11,000/μL is common in pneumonia but by itself is not a definitive criterion for admission; many outpatients have elevated WBC counts. Thus, among the listed options, a WBC count >11,000/μL is not strictly used as an admission trigger and is the correct "except" item.

**10.** (c) Beef

E. coli O157:H7 is often linked with eating undercooked or contaminated ground beef, as the organism resides in cattle intestines. During slaughter or processing, beef can be tainted; if it is not cooked to a sufficiently high temperature, ingestion of live bacteria can result. Poultry contamination is more classically associated with Salmonella, eggs with Salmonella or other bacteria, and soft cheeses (especially unpasteurized) with organisms like Listeria. Beef remains the principal food associated with E. coli O157 outbreaks.

**11.** (b) Corynebacterium jeikeium

The HACEK group comprises Haemophilus, Aggregatibacter (formerly Actinobacillus) actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, and Kingella kingae—organisms commonly associated with endocarditis. Corynebacterium jeikeium is a Gram-positive bacterium frequently isolated from skin flora and linked with infections in immunocompromised patients, but it is not part of the HACEK complex, which are Gram-negative organisms typically implicated in culture-negative endocarditis.

**12.** (a) Interstitial keratitis

Neonatal congenital syphilis commonly manifests as snuffles, hepatosplenomegaly, rash, and can include meningitis, choroiditis, and osteochondritis (bone involvement). Interstitial keratitis, however, is part of the Hutchinson's triad that typically presents later in childhood or adolescence, not in the immediate neonatal period. Hence, among these choices, interstitial keratitis is the feature "except" for neonatal presentation and appears later as a sign of late congenital syphilis.

**13.** (d) Undulant fever

Spirochetes are spiral-shaped bacteria responsible for diseases such as leptospirosis (Leptospira interrogans), pinta (Treponema carateum), and relapsing fever (Borrelia recurrentis or related species). Undulant fever is another name for brucellosis, which is caused by Brucella species—Gram-negative coccobacilli, not spirochetes. Since Brucella does not belong to the spirochete family, undulant fever is not spirochetal in origin, making it the correct choice for "not caused by Spirochetes."

**14.** (d) Leptospirosis

Leptospirosis (particularly Weil's disease) classically presents with a history of freshwater

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exposure, followed by fever, severe myalgia, jaundice, hemorrhages, and acute renal failure. Dengue fever typically features high fever and thrombocytopenia but not the profound jaundice/renal failure described. Falciparum malaria can be severe but is more strongly associated with cerebral involvement and hemolysis. Acute Hepatitis E infection causes jaundice but not usually hemorrhage or the severe systemic features seen here.

**15.** (b) Legionella

Spirochetes are spiral-shaped bacteria. Borrelia (e.g., Borrelia burgdorferi), Leptospira, and Treponema (e.g., Treponema pallidum) are classic spirochetes. Legionella pneumophila, by contrast, is a Gram-negative bacillus that causes Legionnaires' disease (primarily pneumonia and systemic symptoms). It is neither spiral-shaped nor classified among the Spirochetales. Therefore, Legionella is the organism here that is "not a Spirochete."

**16.** (b) Larval form of Taenia solium

Neurocysticercosis occurs when humans ingest eggs of Taenia solium (pork tapeworm), which then hatch into larvae. These larvae can migrate to the central nervous system and form cysts in the brain. The adult form of Taenia solium resides in the human intestine and does not produce neurocysticercosis. Taenia saginata (beef tapeworm) is not typically associated with neurocysticercosis. Hence, the larval form of Taenia solium is the correct cause of this parasitic CNS infection.

**17.** (a) Temperature 39° C

The WHO defines severe malaria by factors such as severe anemia (Hb <5 g/dL in children), hypoglycemia, metabolic acidosis, cerebral involvement, renal failure, and other major complications. Although fever is common in malaria, a high temperature alone (e.g., >39°C) is not one of the formal WHO criteria for "severe" disease. The other three options—severe anemia, hypoglycemia, and metabolic acidosis—are indeed recognized criteria for severe malaria.

**18.** (c) Strip test for recombinant $K_{39}$ antigen

The rK39-based strip test is well-known for its high sensitivity and specificity in diagnosing visceral leishmaniasis, especially in endemic regions. Direct agglutination and latex agglutination tests can also be used but are generally less reliable. Fluorescent dye–based methods are more complex and not as widely used in straightforward diagnosis. The rK39 test has emerged as the most practical and accurate point-of-care assay for this parasitic infection.

**19.** (d) Praziquantel

Praziquantel is the standard treatment for all major species of Schistosoma (including S. mansoni, S. haematobium, and S. japonicum). It affects the parasite's membrane permeability, leading to paralysis and death of the worms. Niclosamide is used primarily for tapeworms, ivermectin for filarial and certain nematode infections, and albendazole for a range of other helminths. For schistosomiasis, praziquantel remains the universally recommended therapy.

**20.** (a) Brugia timori

Lymphatic filariasis is caused by Wuchereria bancrofti, Brugia malayi, and Brugia timori. Loa loa produces loiasis (eye worm), Onchocerca volvulus causes onchocerciasis (river blindness), and Mansonella perstans typically leads to mild or asymptomatic infections affecting serous cavities but does not classically cause significant lymphatic disease. Brugia timori specifically contributes to lymphatic filariasis in certain geographic regions, making it the correct choice among the listed organisms.

**21.** (c) Bronchial asthma

Allergic bronchopulmonary aspergillosis (ABPA) is a hypersensitivity reaction to Aspergillus organisms colonizing the bronchial tree. It most classically occurs in patients with asthma or, occasionally, cystic fibrosis. Characteristic features include episodic bronchial obstruction, fleeting pulmonary infiltrates, elevated IgE levels, and central bronchiectasis. It is not associated with lung cancer, tuberculosis, or sarcoidosis in the typical manner that it is with asthma.

**22.** (c) Nystatin

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For invasive candidiasis in neutropenic patients, recommended options include amphotericin B formulations, echinocandins (like caspofungin), and azoles such as voriconazole. Nystatin is primarily used as a topical or oral suspension for mild oropharyngeal or cutaneous candidiasis. It is not suitable for treating deep-seated or systemic infections in severely immunocompromised individuals. Thus, Nystatin is the agent "not recommended" in this scenario.

**23.** (c) Orthostatic hypotension

Orthostatic (postural) hypotension is often the earliest clinically detectable sign of volume depletion, occurring when fluid losses reduce venous return enough that standing causes a significant drop in blood pressure. Decreased urine output is also an early physiologic response, but it may not be as immediately apparent clinically. Loss of skin turgor and sunken eyes tend to manifest later or in more severe stages of hypovolemia. Hence, orthostatic hypotension is considered the first key clinical indicator.

**24.** (d) TSH

The patient's symptoms (weight gain, coarse hair, constipation, and menorrhagia) suggest hypothyroidism. The most appropriate single initial screening test is serum TSH (thyroid-stimulating hormone). If TSH is elevated, further evaluation with free T4 is appropriate. Thyroid scans and serum iodine levels are not first-line in straightforward suspected primary hypothyroidism. TSH offers a reliable gauge of thyroid function by indicating whether the pituitary is sensing and responding to low circulating thyroid hormone levels.

**25.** (b) X linked recessive

Duchenne muscular dystrophy (DMD) is caused by mutations in the dystrophin gene on the X chromosome. Being X-linked recessive, it primarily affects males, who inherit the defective gene from carrier mothers. Females typically do not manifest the full disease because they possess two X chromosomes (though carriers can have mild symptoms). This is distinct from X-linked dominant disorders, which affect both sexes more uniformly, and from autosomal inheritance patterns that involve non-sex chromosomes.

**26.** (c) Recombinant factor VIII concentrate

Haemophilia A results from a deficiency in Factor VIII, a key cofactor in the intrinsic coagulation pathway. The standard treatment is to replace Factor VIII, preferably using recombinant factor VIII concentrates, to avoid transmissible infections and to achieve precise dosing. Epoprostenol and steroids are unrelated to correcting the clotting factor deficiency. Simple blood transfusion is insufficient since factor levels in whole blood are generally low and not specifically targeted at correcting factor VIII deficiency.

**27.** (b) 4 – 6 weeks

Acute bacterial prostatitis typically requires a prolonged antibiotic course to ensure eradication of pathogens from the prostate tissue and to prevent progression to chronic prostatitis. Short-term regimens (3, 7, or even 14 days) are usually inadequate. Most guidelines recommend at least 4 weeks, and often 4–6 weeks total therapy, particularly if the infection is severe or complications might occur. This longer duration helps achieve complete bacterial clearance, reducing recurrence risk.

**28.** (c) It is available as oral preparation.

Aztreonam is a monobactam antibiotic highly active against Gram-negative aerobic bacteria (including Pseudomonas) but with virtually no activity against Gram-positive organisms or anaerobes. It is generally administered intravenously or intramuscularly, not orally. Twice-daily to three-times-daily dosing (including 12-hour regimens) is standard. Hence, the statement "It is available as oral preparation" is not correct, making it the best answer among the given options for what is "not correct."

**29.** (a) Lymphocytes

Polycythemia vera is a myeloproliferative disorder with elevated RBC mass, often accompanied by increased WBC (especially granulocytes) and platelets. While there can

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be some fluctuation in lymphocyte counts, the most characteristic abnormalities are marked erythrocytosis and frequently thrombocytosis and neutrophilia. Lymphocytes may remain closer to normal ranges compared to these other cell lines, making them most likely to be within normal limits in polycythemia vera.

**30.** (d) Frusemide

In nephrogenic diabetes insipidus, the kidneys do not respond adequately to ADH. Thiazides reduce urine output by promoting mild volume depletion, which increases proximal sodium and water reabsorption. Amiloride helps particularly if lithium-induced nephrogenic DI is suspected, and NSAIDs like indomethacin reduce renal prostaglandins, limiting free water losses. By contrast, loop diuretics (e.g., frusemide) can increase water excretion and exacerbate polyuria. Hence, frusemide is the agent that does not improve nephrogenic DI.

**31.** (d) 1, 2 and 3

In type 1 diabetes, the primary defect is insulin deficiency from autoimmune pancreatic beta-cell destruction. Exogenous insulin is mandatory; oral hypoglycemic agents do not address this fundamental insulin requirement. Sulfonylureas, biguanides (metformin), and thiazolidinediones are used in type 2 diabetes to improve insulin secretion or sensitivity but are not appropriate as first-line treatments for type 1. Hence, none of them (1, 2, or 3) is recommended as first-line therapy in type 1 diabetes.

**32.** (d) Acetaminophen

High-dose acetylsalicylic acid (aspirin), phenylbutazone, and sulfinpyrazone can have a uricosuric effect, enhancing renal excretion of uric acid. Acetaminophen (paracetamol), however, does not promote uric acid excretion. It primarily acts as an analgesic and antipyretic, with minimal anti-inflammatory or uricosuric properties. At lower doses, aspirin can actually decrease uric acid excretion, but the question here highlights which agents do not raise excretion at all—acetaminophen fits that description.

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**33.** (b) Secondary

Condyloma lata are highly infectious moist lesions typically seen in secondary syphilis. They often appear in warm, moist anatomical areas, such as the perineum. Primary syphilis is characterized by a chancre at the site of infection, whereas tertiary syphilis can involve gummas, neurosyphilis, or cardiovascular complications. Congenital syphilis presents differently (e.g., snuffles, rash, bone involvement). Thus, condyloma lata is a hallmark of the secondary stage.

**34.** (a) Mental impairment, ophthalmoplegia and cerebellar ataxia

Wernicke's encephalopathy is a neurological emergency caused by thiamine (vitamin $B_1$) deficiency. The classic triad consists of mental status changes (often confusion), ophthalmoplegia (or nystagmus), and ataxia. Facial palsy and hearing loss are not typical features. Prompt recognition and administration of intravenous thiamine are critical to prevent progression to Korsakoff syndrome. This deficiency is frequently seen in alcohol use disorder but can also appear in other states of malnutrition.

**35.** (c) Both 1 and 2

Vitamin $B_6$ is essential in numerous biochemical reactions, particularly in amino acid metabolism (e.g., transamination, decarboxylation). The active coenzyme form in the human body is pyridoxal 5-phosphate (PLP). This form participates in synthesizing neurotransmitters, hemoglobin, and other important compounds. Hence, both given statements are correct: Vitamin $B_6$ is indeed a cofactor for amino acid metabolism, and PLP is the standard biologically active form.

**36.** (c) Kerion

A kerion is an inflammatory form of tinea capitis (fungal infection of the scalp) that presents as a swollen, boggy lesion often accompanied by hair loss (alopecia). It can look abscess-like, but is actually a hypersensitivity reaction to the fungal infection. Folliculitis decalvans is more chronic

and not typically cystic and boggy. Hematoma is a localized collection of blood, and congenital syphilis has different clinical findings. Kerion best fits the described lesion.

**37.** (a) Thermal

In leprosy (Hansen's disease), small unmyelinated fibers subserving temperature (thermal) and pain sensations tend to be affected first. As Mycobacterium leprae invades peripheral nerves, the initial clinical hallmark is loss of the ability to perceive temperature changes; later, pain, light touch, and deep-pressure/vibration may become compromised. The earliest and most characteristic finding is typically decreased or absent thermal sensation in patches of hypoesthetic skin.

**38.** (a) Human papilloma virus

Common warts (verrucae vulgaris) are caused by certain strains of Human Papillomavirus (HPV), typically types 2 and 4. They often manifest as small, firm papules with a rough surface, usually appearing on hands, fingers, or other body sites. Cytomegalovirus, HIV, and Herpesvirus families are associated with different disease processes, not typical benign cutaneous warts.

**39.** (d) Tuberous sclerosis

"Ash leaf" macules are hypopigmented lesions seen in tuberous sclerosis complex. Under Wood's lamp (UV light), these macules become more apparent, aiding in diagnosis, especially if they are subtle on normal examination. Tuberous sclerosis is also characterized by seizures, mental developmental issues, and benign tumors in various organs. The other listed conditions—atopic dermatitis, lichen planus, and nummular eczema—do not characteristically feature ash leaf spots.

**40.** (c) Immune reconstitution inflammatory syndrome

When a patient with HIV begins effective antiretroviral therapy (ART), the recovering immune system can mount an exaggerated inflammatory response to previously acquired opportunistic infections. In this case, the rising CD4 count is linked to an immunological flare-up against Mycobacterium tuberculosis, causing enlarged lymph nodes and other inflammatory signs. This phenomenon is known as immune reconstitution inflammatory syndrome (IRIS). It is not necessarily due to drug resistance, defaulters, or poor compliance.

**41.** (b) Sodium bi-carbonate

In salicylate (aspirin) overdose, sodium bicarbonate is used to alkalinize both serum and urine. Raising blood pH helps shift salicylate out of the central nervous system, while alkalinization of the urine promotes salicylate excretion by trapping it in an ionized form. N-acetylcysteine is the antidote for acetaminophen overdose, and acetazolamide or allopurinol do not specifically address salicylate toxicity.

**42.** (c) Gardnerella vaginalis

Bacterial vaginosis, most commonly caused by Gardnerella vaginalis, presents with a homogenous, thin, white discharge coating the vaginal walls. Amsel's criteria include homogenous discharge, elevated vaginal pH (>4.5), positive whiff test (fishy odor with KOH), and the presence of clue cells on microscopy. Candida infections often cause thick, "cottage cheese" discharge, Trichomonas leads to a frothy yellow-green discharge, and gonorrhea typically causes a purulent discharge.

**43.** (a) Celiac sprue

The question describes dermatitis herpetiformis, which shows granular IgA deposits in the dermal papillae or mucoepidermal junction. It is characterized by intensely pruritic, grouped vesicles and is strongly associated with celiac disease (celiac sprue). Patients often have gluten sensitivity and respond well to a gluten-free diet and dapsone. Lactase deficiency and Whipple's disease have different clinical pictures, while ulcerative colitis is typically associated with different extraintestinal manifestations.

**44.** (d) Localised tenosynovitis of the flexor tendons of the fingers is an infrequent cause.

Carpal tunnel syndrome (CTS) occurs when the median nerve is compressed at the wrist.

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of the conduction tissue, making (a) the most likely ECG manifestation.

**73.** (c) Paroxysmal supraventricular tachycardia

A regular narrow-complex tachycardia at 220 beats/min in an infant, resolving promptly with IV adenosine, is most consistent with paroxysmal supraventricular tachycardia (PSVT). Adenosine temporarily blocks AV nodal conduction, often terminating the re-entrant circuit driving PSVT. Atrial fibrillation or flutter are less likely in such a young infant, and ventricular tachycardia typically does not normalize so quickly with adenosine. Prompt resolution of heart rate after adenosine administration strongly suggests PSVT.

**74.** (c) Choanal atresia

Newborns are predominantly nasal breathers. In choanal atresia, there is a blockage of the posterior nasal passages, causing obstruction when the mouth is closed. Crying forces the baby to breathe through the mouth, thereby relieving cyanosis; but when the baby is quiet and tries to breathe nasally, cyanosis worsens. Diaphragmatic hernia and congenital heart disease can cause respiratory distress or cyanosis, but they do not typically show improvement with crying. Tracheal agenesis is extremely rare and presents more severely.

**75.** (c) NaCl 2·69 g; KCl 1·5 g; Glucose 13·5 g; Citrate 2·9 g

The standard WHO Reduced Osmolarity ORS solution has approximately 75 mEq/L of sodium, 75 mmol/L of chloride, 20 mmol/L of potassium, 75 mmol/L of glucose, and 10 mmol/L of citrate, giving a total osmolarity of around 245 mOsm/L. In practice, this translates to roughly 2.6 g of NaCl, 1.5 g of KCl, 13.5 g of anhydrous glucose, and 2.9 g of trisodium citrate per liter. Option (c) aligns with those values (small variations are due to rounding).

**76.** (d) Mental retardation

Turner syndrome (45,X) typically presents with short stature, webbed neck, widely spaced nipples, streak ovaries, coarctation of the aorta, and sometimes horseshoe kidney. Although subtle learning difficulties can occur, marked intellectual disability is not a classic feature; most patients have normal intelligence. In contrast, a webbed neck, coarctation, and horseshoe kidney are recognized clinical associations. Therefore, "mental retardation" is the finding that is not characteristically part of Turner syndrome.

**77.** (d) Increase in breast size

In female puberty, thelarche (breast budding) generally occurs first, driven by rising estrogen levels. Pubarche (appearance of pubic hair) typically follows, influenced by adrenal and ovarian androgens. Menarche (onset of menstruation) happens later in the sequence, often around Tanner stage 3–4, approximately two years after breast budding. A marked change in voice is more characteristic of male puberty. Thus, breast development is recognized as the earliest visible sign among these options.

**78.** (d) Phenylketonuria

The Guthrie test is a bacterial inhibition assay historically used in newborn screening for phenylketonuria (PKU). Blood from a newborn's heel prick is placed on a filter paper disk and tested for elevated phenylalanine. If present in high concentrations, it overcomes the bacterial inhibitor in the medium, allowing bacterial growth to occur (a positive test). Modern programs employ various automated methods, but the classic Guthrie test remains well known for PKU screening, not for tyrosinemia, galactosemia, or alkaptonuria.

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**79.** (c) Congenital adrenal hyperplasia

The classic salt-wasting form of congenital adrenal hyperplasia (CAH), usually due to 21-hydroxylase deficiency, leads to inadequate production of cortisol and aldosterone. This results in hyperkalemia, hyponatremia, hypoglycemia, and potentially life-threatening shock in the first few weeks of life. SIADH generally causes hyponatremia without hyperkalemia, gram negative sepsis would not characteristically produce this specific triad, and PKU causes developmental issues later rather than acute adrenal crisis. CAH best fits the described lab findings and shock.

are acetylcholinesterase inhibitors, designed to increase synaptic acetylcholine and improve symptoms, at least modestly. Although other neurotransmitter pathways may be affected, the therapeutic approach focuses on slowing cholinergic depletion rather than targeting serotonin, histamine, or dopamine systems. By inhibiting the breakdown of acetylcholine, these drugs aim to improve or stabilize cognitive function.

**52.** (b) Intestinal stenosis

Down syndrome (trisomy 21) is associated with growth delays, intellectual disability ("mental retardation" in older terminology), brachydactyly (short fingers), and various other characteristic features such as epicanthic folds and a single palmar crease. While congenital GI anomalies like duodenal atresia or Hirschsprung disease can occur, true "intestinal stenosis" is not classically described as a hallmark. Duodenal atresia causes a different radiographic picture ("double-bubble"), not typical stenosis. Hence, option (b) is the correct "except."

**53.** (b) Hereditary motor and sensory neuropathy type 1

Many known single-gene disorders (e.g., haemochromatosis HFE mutation, achondroplasia's FGFR3 mutation, α-1 antitrypsin deficiency) stem from specific point mutations or small changes in the gene coding sequence. By contrast, the most common cause of hereditary motor and sensory neuropathy type 1 (Charcot-Marie-Tooth disease type 1A) involves a duplication of the PMP22 gene region on chromosome 17 rather than a simple point mutation. Consequently, it stands apart from the others, which are typically caused by point substitutions.

**54.** (d) A-2 B-4 C-1 D-3

1. Atrio-ventricular (AV) block → Beta blockers (2) can depress AV nodal conduction.
2. Sinus tachycardia → Theophylline (4) stimulates the heart rate.
3. Wide QRS → Phenothiazines (1) can prolong conduction and widen QRS complexes.
4. QT interval prolongation → Terfenadine (3) is known for prolonging QT and risking torsades.

Thus, the correct matching is A→2, B→4, C→1, D→3.

**55.** (b) Phenothiazines

Pinpoint (miosis) is typically associated with opioid overdose and excess cholinergic stimulation (e.g., carbamates). Barbiturate overdose often leads to CNS depression and can cause somewhat constricted or mid-position pupils, but opioids are the classic cause of marked miosis. Phenothiazines, by contrast, often have anticholinergic properties that can lead to mydriasis or at least not typically pinpoint pupils. Therefore, phenothiazines are the "except" choice among the listed agents.

**56.** (d) Cranial nerve and brain stem lesions

After the initial acute cholinergic crisis, some organophosphate-poisoned patients develop an "intermediate syndrome" a few days later, featuring prominent weakness, cranial nerve involvement (bulbar weakness), and proximal limb muscle weakness—reflecting neuromuscular junction dysfunction. This contrasts with the later "organophosphate-induced delayed neuropathy," which occurs weeks afterward, involving peripheral nerves. The intermediate syndrome's hallmark is the combination of respiratory muscle fatigue, cranial nerve involvement, and brainstem-related deficits (though not usually structural lesions on imaging).

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**57.** (d) Lithium

Activated charcoal is beneficial for binding many orally ingested toxins—especially drugs with large molecular structure or those that adhere to carbon-based adsorbents (e.g., carbamazepine, dapsone, quinine). However, lithium (a small, charged ion) is poorly adsorbed by activated charcoal, making it ineffective in such poisoning. Other measures, such as enhanced elimination via hemodialysis, are employed in significant lithium overdose.

Common risk factors include hypothyroidism, rheumatoid arthritis (involving tenosynovitis), pregnancy, and repetitive wrist motions. Nighttime pain and numbness, plus weakness in thumb opposition or abduction, are well-documented features. Tenosynovitis of the flexor tendons, especially in inflammatory conditions, is actually a frequent and recognized cause of CTS—not an infrequent one. Thus, option (d) is the statement that is "not correct."

**45.** (c) A-3 B-4 C-1 D-2

Anti-dsDNA is highly specific for systemic lupus erythematosus (SLE).

1. Anti-RNP is associated with mixed connective tissue disease (MCTD).
2. Anti-histone is linked with drug-induced lupus.
3. Anti-centromere is characteristic of CREST syndrome (limited scleroderma).

Hence the sequence is: A→3 (SLE), B→4 (MCTD), C→1 (Drug induced lupus), and D→2 (CREST syndrome).

**46.** (b) Myasthenia gravis

Myasthenia gravis is an autoimmune disorder affecting the neuromuscular junction (anti-acetylcholine receptor antibodies), causing fluctuating skeletal muscle weakness. Classic features include ocular muscle involvement (ptosis, diplopia), bulbar symptoms (dysphagia), and limb weakness that worsens with activity. Thyrotoxic myopathy, muscular dystrophy, and hypokalemic periodic paralysis present differently. The acute onset of bilateral ptosis plus generalized weakness with bulbar symptoms most strongly suggests myasthenia gravis.

**47.** (c) Flight of ideas

Schizophrenia is marked by delusions, hallucinations, disorganized thinking, and loosening of associations. "Flight of ideas" is more typical of bipolar mania, where the patient rapidly shifts between loosely connected thoughts at high speed. In schizophrenia, formal thought disorder is often described as tangentiality, circumstantiality, or derailment but not classic "flight of ideas." Therefore, among the listed options, flight of ideas does not characteristically define schizophrenia.

**48.** (d) A-1 B-4 C-2 D-3

- Thioridazine can cause pigmentary retinopathy, a known ocular toxicity.

1. Clozapine may lead to agranulocytosis (severe neutropenia) and thus requires regular blood counts.
2. Olanzapine frequently causes sedation (somnolence), weight gain, and metabolic issues.
3. Haloperidol often produces extrapyramidal effects such as akathisia.

Thus, A→1, B→4, C→2, D→3.

**49.** (c) A-4 B-3 C-2 D-1

Bipolar disorder is commonly stabilized with lithium.

1. Major depression often responds to antidepressants like venlafaxine (an SNRI).
2. Schizophrenia can be treated with antipsychotics, such as clozapine (particularly in resistant cases).
3. Obsessive compulsive disorder is frequently managed with higher-dose SSRIs or clomipramine (a tricyclic).

Thus, A→4, B→3, C→2, D→1.

**50.** (c) p 53

The p53 gene (TP53) is famously mutated or inactivated in more than half of human cancers, including a range of solid tumors (breast, colon) and hematologic malignancies (childhood leukemias). It encodes a tumor suppressor protein crucial for DNA repair, cell cycle arrest, and apoptosis. Rb is associated with retinoblastoma and some other cancers, STK11 with Peutz-Jeghers syndrome, and VHL with von Hippel–Lindau disease. p53 stands out as the most commonly altered tumor suppressor gene.

**51.** (c) Acetylcholine

In Alzheimer's-type dementia, cognitive decline, memory loss, and apraxias reflect a deficiency in cholinergic transmission. Approved medications (e.g., donepezil, rivastigmine, galantamine)

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α-adrenergic–mediated vasoconstriction. Only after adequate α-blockade is established can a β-blocker (e.g., propranolol) be added if needed to control tachycardia. Using a β-blocker first is contraindicated because unopposed α-adrenergic effects may precipitate a dangerous hypertensive crisis.

**66.** (b) Inhibition of membrane $Na^+$, $K^+$-ATPase

Digoxin and related cardiac glycosides inhibit the $Na^+/K^+$-ATPase pump in cardiac myocytes. This raises intracellular sodium, which in turn reduces the activity of the $Na^+/Ca^{2+}$-exchanger that normally exports calcium. As a result, intracellular calcium levels rise, enhancing actin-myosin cross-bridge formation and thus increasing contractility. Other listed mechanisms (opening calcium channels, myosin ATPase stimulation, or direct calcium release) are not the principal mode by which digitalis exerts its inotropic effect.

**67.** (d) Meningococcal meningitis

Although rifampicin is a key antitubercular medication, standard prophylaxis for TB exposure typically involves isoniazid (INH). Rifampicin prophylaxis is most famously used to prevent secondary cases of Neisseria meningitidis in close contacts. It reduces nasopharyngeal carriage and thereby transmission. While rifampicin can be part of regimens for leprosy or tuberculosis treatment, it is not the recommended prophylaxis for those conditions. Hence, meningococcal meningitis prophylaxis is the best match.

**68.** (a) Magnesium sulphate

Torsades de pointes is a polymorphic ventricular tachycardia associated with prolonged QT interval. IV magnesium sulfate is the first-line acute treatment, even if the patient's serum magnesium does not appear low. It stabilizes cardiac myocytes' electrical activity and can terminate the arrhythmia. Other agents (isoproterenol, lidocaine, pacing) might be used in specific contexts, but magnesium is the definitive initial choice for torsades.

**69.** (c) Azathioprine

Certain anticancer agents are notorious for cardiotoxic side effects. Doxorubicin (Adriamycin) can cause dose-related cardiomyopathy, cyclophosphamide can produce hemorrhagic myocarditis at high doses, and mitoxantrone also possesses cardiotoxic potential. Azathioprine is an immunosuppressant often used in autoimmune disease or transplantation but is not particularly known for direct cardiotoxic effects. Among the listed options, azathioprine stands out as the "except" for significant cardiovascular toxicity.

**70.** (b) Achalasia of oesophagus

Achalasia is a motility disorder involving failure of the lower esophageal sphincter to relax and loss of normal peristalsis in the esophageal body. Patients often experience more trouble swallowing liquids (or liquids and solids equally) than solids alone, which contrasts with mechanical obstructions (e.g., carcinoma), where solids pose greater difficulty initially. In achalasia, the functional obstruction and aperistalsis produce progressive dysphagia that frequently starts with liquids.

**71.** (d) Urine examination

In a child with rheumatic heart disease who now has fever, splenomegaly, and pallor, infective endocarditis is a primary concern. Key investigations include ECG (may show conduction abnormalities), echocardiogram (to detect vegetations or valvular lesions), and blood cultures (to identify the causative organism). While urinalysis can sometimes reveal microscopic hematuria in endocarditis, it is not essential for the initial diagnosis. Therefore, "urine examination" is the least necessary among the listed options.

**72.** (a) Prolonged PR interval

Acute rheumatic fever with carditis often affects the conducting system, leading to first-degree AV block (a prolonged PR interval) as a common ECG finding. While other changes (e.g., ST-T wave abnormalities) may occur, the prolonged PR is characteristically noted in rheumatic carditis. Indeed, AV conduction prolongation is frequently encountered due to inflammation

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picture. Other pairings (VSD with aortic stenosis, ruptured sinus of Valsalva, or a complete AV canal) refer to different congenital cardiac anomalies, not Lutembacher's syndrome.

**88.** (a) Tuberculosis

Phlyctenular keratoconjunctivitis is a hypersensitivity reaction, historically most often tied to Mycobacterium tuberculosis proteins. It presents with small nodules or "phlyctenules" on the conjunctiva or cornea, causing redness, photophobia, and tearing. Though TB is the classic association, staphylococcal antigens can also trigger it. Syphilis, Stevens-Johnson syndrome, and leprosy cause different ocular manifestations but are not the usual cause of phlyctenular lesions.

**89.** (a) Haemophilus influenzae type B

Before widespread vaccination, Haemophilus influenzae type b (Hib) was the leading cause of acute epiglottitis in young children, a potentially life-threatening infection causing airway obstruction. Vaccination has greatly reduced its incidence, but it remains the classic etiology. Viral pathogens (e.g., influenza, parainfluenza) often lead to croup (laryngotracheobronchitis), whereas staphylococcal infection is more often linked with pneumonia or secondary bacterial tracheitis, not classic acute epiglottitis.

**90.** (d) Kawasaki disease

Kawasaki disease is an acute vasculitis of childhood. Its classical diagnostic features are fever for $\geq$5 days plus at least four of: non-purulent conjunctivitis, rash, cervical lymphadenopathy, oral mucosal changes (strawberry tongue, lip cracking), and extremity changes (swelling or desquamation). Coronary artery aneurysms are a severe complication. Measles, rubella (German measles), and progeria do not typically present with this combination of prolonged fever, conjunctivitis, lymphadenopathy, and coronary abnormalities.

**91.** (c) Manipur

Keibul Lamjao National Park, located on the Loktak Lake in Manipur, is famously known as the world's only "floating" national park because of the phumdis (floating decomposed plant material) on which its wildlife habitats rest. It is notable for the brow-antlered deer (Sangai). The other listed states—Chhattisgarh, Madhya Pradesh, and Meghalaya—are home to different notable reserves and attractions but do not host the floating national park.

**92.** (b) Damodar Valley Corporation

Commissioned in the late 1940s, the Damodar Valley Corporation (DVC) is widely recognized as India's first multipurpose river valley project. It was established to control flooding, provide irrigation, generate electricity, and foster regional development in the Damodar River basin (mainly in Jharkhand and West Bengal). The Bhakra Nangal, Farakka, and Nagarjuna Sagar projects were begun thereafter. Hence, DVC holds the distinction of being the pioneering multipurpose project.

**93.** (b) Hampi

Hampi, in Karnataka, is an archaeological treasure famed for its 14th-century Vijayanagara Empire ruins. It is recognized as a UNESCO World Heritage Site for its historical significance and stunning architecture. Bhitarkanika is a national park in Odisha, Pachmarhi is a hill station in Madhya Pradesh, and Shravanabelagola is renowned for its Jain pilgrimage site—though historically and culturally important, they are not UNESCO World Heritage Sites, whereas Hampi is.

**94.** (c) 20 km and 50 km

The ozone layer is chiefly located in the stratosphere, extending roughly from about 15–20 km up to around 50 km above Earth's surface. This region, sometimes called the "ozone layer," filters harmful ultraviolet radiation. Lower altitudes (2–5 km) are within the troposphere, where ozone is typically a pollutant near ground level. The very high altitudes (60–100 km) are the mesosphere and thermosphere, not known for concentrated ozone.

**95.** (b) the elected members of the State Legislative Councils

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**80.** (d) Course of the disease has no association with uveitis

Juvenile rheumatoid arthritis (now often called juvenile idiopathic arthritis) begins before age 16. Systemic onset (Still's disease) is one recognized form, though others also occur. Uveitis is a known complication—particularly in the pauciarticular (oligoarticular) subtype—and may progress silently without symptoms. Indeed, regular ophthalmologic screening is recommended due to the real risk of ocular involvement. Thus, the statement that the "course of the disease has no association with uveitis" is incorrect.

**81.** (d) Zinc

Acrodermatitis enteropathica is an autosomal recessive disorder characterized by defective zinc absorption, leading to a triad of dermatitis (particularly around body orifices and acral surfaces), diarrhea, and alopecia. Supplementing zinc rapidly reverses the condition. Copper deficiency yields different clinical issues (e.g., anemia, neutropenia), cobalt deficiency is extremely rare in humans (and is mainly integral to vitamin B12), and chromium deficiency affects glucose metabolism.

**82.** (d) Cystic fibrosis

Cystic fibrosis is an autosomal recessive disorder caused by mutations in the CFTR gene. Children must inherit two defective alleles (one from each parent) to manifest the disease. By contrast, achondroplasia, neurofibromatosis type 1, and Marfan syndrome commonly follow autosomal dominant inheritance. Only one mutant allele is needed to express these conditions. Thus, among the listed options, cystic fibrosis stands out as autosomal recessive.

**83.** (c) Intussusception

In intussusception, one segment of the intestine telescopes into another, often causing obstruction and ischemia. This can lead to the passage of "red current jelly" stools—stool mixed with blood and mucus. It is a classic descriptor of this condition in infants. Acute gastroenteritis typically produces watery or sometimes bloody diarrhea, but not the typical "currant jelly." Rectal piles and fissure-in-ano do not generally occur at this age with that specific presentation.

**84.** (c) Acute myeloid leukaemia

Chloroma (also called granulocytic sarcoma or myeloid sarcoma) is an extramedullary tumor of myeloblasts, typically associated with acute myeloid leukemia (AML). It derives its greenish appearance from the enzyme myeloperoxidase. Burkitt's lymphoma, acute lymphoblastic leukemia (ALL), and Ewing's sarcoma do not produce chloromas. When these lesions appear, they suggest extramedullary proliferation of myeloid blasts characteristic of AML.

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**85.** (d) Opsoclonus

Wilms' tumor (nephroblastoma) is linked to aniridia (WAGR syndrome), hemihypertrophy, and occasionally horseshoe kidney. Opsoclonus-myoclonus syndrome ("dancing eyes, dancing feet") is more notably associated with neuroblastoma. In Wilms' tumor, ocular involvement such as aniridia is common, but opsoclonus is not a recognized paraneoplastic manifestation. Hence, among the listed associations, opsoclonus is the exception.

**86.** (b) 1 and 2 only

The old "universal antidote" (a mix of charcoal, magnesium oxide, and tannic acid) is indeed obsolete, having been replaced by activated charcoal alone. Flumazenil, while occasionally used to reverse procedural sedation, is generally avoided in benzodiazepine overdose because of seizure risk if there is co-ingestion (e.g., TCAs). Hence it's largely disfavored in toxicology practice. Meanwhile, acetylcysteine for paracetamol toxicity and pyridoxine for isoniazid remain standard, effective antidotes and are not obsolete.

**87.** (c) Atrial septal defect with mitral stenosis

Lutembacher's syndrome is a rare combination of congenital atrial septal defect (ASD) and acquired or congenital mitral stenosis. The mitral lesion results in elevated left atrial pressure, while the ASD provides a left-to-right shunt, leading to a distinctive hemodynamic

**58.** (c) CD8

Killer T lymphocytes (cytotoxic T cells) express the CD8 surface marker and recognize antigenic peptides presented by MHC class I molecules. This allows them to identify and destroy host cells infected with intracellular pathogens (e.g., viruses). CD4 T cells (helper T cells) engage MHC class II. CD2, CD5, and CD10 are present on various other immune cells but do not specifically define cytotoxic T cell function. Hence, CD8 is the hallmark phenotype of killer T cells.

**59.** (b) 7 - 10%

In HIV co-infection, the risk of latent TB progressing to active disease rises dramatically—often estimated at about 8-10% per year, compared to a much lower lifetime risk in immunocompetent individuals. As CD4 counts decline, immune surveillance against Mycobacterium tuberculosis weakens, making reactivation more likely. Thus, the 7–10% figure aligns with widely cited annual reactivation rates in HIV patients lacking appropriate prophylaxis or treatment.

**60.** (c) IgG

Maternal IgG is actively transported across the placenta, conferring passive immunity to the fetus and newborn during the first few months of life. In contrast, IgM is too large to cross the placenta, IgA is mainly found in secretions (such as breast milk), and IgE is associated with allergic responses. The placental transfer of IgG helps protect the infant from various pathogens that the mother has antibodies against.

**61.** (b) Severe rheumatoid arthritis

High-dose IVIG has established roles in autoimmune thrombocytopenia (ITP), Guillain-Barré syndrome, chronic inflammatory demyelinating polyneuropathy, Kawasaki disease, and sometimes in refractory dermatomyositis. Although rheumatoid arthritis is an autoimmune condition, standard therapies include disease-modifying antirheumatic drugs (DMARDs) and biologics (e.g., anti-TNF agents) rather than routine IVIG. Thus, among the listed options, "severe rheumatoid arthritis" is the one where IVIG is not a standard indication.

**62.** (a) C1q

The classical complement pathway is initiated when C1q binds to the Fc regions of antibodies (IgG or IgM) that are attached to antigen. This interaction bridges adaptive immunity (antibodies) with the complement system (innate immunity). C3b and C5a are generated downstream in the cascade, facilitating opsonization and inflammation. Thus, C1q is the key subcomponent that launches the classical pathway through recognition of antigen-antibody complexes.

**63.** (a) Rheumatoid arthritis

Anti-CCP antibodies (anti-cyclic citrullinated peptide) are highly specific for rheumatoid arthritis (RA). They can appear early in the disease course and predict more aggressive joint involvement. While other autoimmune conditions (e.g., lupus, mixed connective tissue disease) have different serologic markers, anti-CCP remains a hallmark for diagnosing and assessing RA. Thus, in an initially "undifferentiated" arthritis, a positive anti-CCP test strongly supports the likelihood of RA rather than the alternative diagnoses.

**64.** (c) Multiple myeloma

CRP is an acute-phase reactant commonly elevated in inflammatory, infectious, and autoimmune conditions such as Crohn's disease, vasculitis, and giant cell arteritis. In multiple myeloma, the immunoglobulin excess (particularly monoclonal protein) is not typically associated with a marked increase in CRP unless secondary infection or inflammation is present. Therefore, among the listed conditions, multiple myeloma is the "except," as it does not intrinsically drive CRP to rise.

**65.** (d) Phenoxy-benzamine followed by propranolol

In pheochromocytoma, hypertensive crises stem from excessive catecholamine release. First-line preoperative treatment is a long-acting nonselective α-blocker like phenoxybenzamine to control blood pressure by preventing

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The Constitution specifies that the Indian President is elected by an electoral college comprising the elected members of both Houses of Parliament (Lok Sabha and Rajya Sabha) and the elected members of the Legislative Assemblies of States (and certain Union Territories). However, members of the State Legislative Councils (the upper houses in select states) do not form part of this electoral college. Hence, option (b) is correctly excluded.

**96.** (a) 1 only

Historically, the Secretary of the Planning Commission has also served as Secretary to the National Development Council, making statement 1 correct. However, the Prime Minister of India was ex-officio Chairman of the Planning Commission (which existed prior to the NITI Aayog). The Chairman of the Rajya Sabha is the Vice-President of India, not the ex-officio head of the Planning Commission. Thus, statement 2 is incorrect, and only statement 1 is correct.

**97.** (b) A-2 B-1 C-4 D-4

Kaiga → Karnataka (2)

1. Kakrapar → Gujarat (1)
2. Narora → Uttar Pradesh (4)
3. Rawatbhata → Rajasthan (3)

Therefore, the sequence A→2, B→1, C→4, D→3 fits code (b) 2 1 4 3.

**98.** (b) Fungus

"Kargasok tea" (similar to kombucha-style preparations) involves a symbiotic culture that is sometimes referred to as a "fungus" or "mushroom" (though it also includes bacteria). Traditionally, a yeast/fungal colony ferments sweetened tea, producing a sour, lightly effervescent beverage. Of the choices given, "fungus" best fits the culture used in preparing Kargasok tea, rather than a separate bacterium, insect larva, or plant latex.

**99.** (c) Both 1 and 2

ASHAs (Accredited Social Health Activists) are frontline community health workers under the National Rural Health Mission. They promote mother and child health, including helping women use simple pregnancy detection kits early in pregnancy. They also educate families about proper nutrition, immunization schedules, and basic hygiene measures, among many other tasks. Therefore, both statements (1) and (2) accurately capture some of the roles performed by ASHAs.

**100.** (a) Arunachal Pradesh

Per the 2001 Indian census, Arunachal Pradesh reported the lowest population density among the listed options (roughly 13 persons/km$^2$). Sikkim, Meghalaya, and Chhattisgarh all had higher population densities compared to Arunachal's sparsely inhabited terrain. Although current figures may differ slightly, historically Arunachal Pradesh remains one of India's least densely populated states.

**101.** (b) Ganga

The Ganges (Ganga) River is famous for its population of the endangered Ganges river dolphins (Platanista gangetica), also called "Susu." While river dolphins can also be found in the Brahmaputra basin, the Ganga is especially renowned for them, and important conservation areas (like the Vikramshila Gangetic Dolphin Sanctuary) are situated along its course. Godavari and Narmada are less noted for dolphin populations.

**102.** (c) Turmeric powder

Lead chromate ($PbCrO_4$) is a bright yellow compound sometimes illegally added to turmeric powder to enhance its yellow color. This practice poses significant health hazards due to lead toxicity. Other adulterants (e.g., Sudan dye) may be found in chili powder, while black pepper and wheat flour typically face different adulteration issues. Hence, lead chromate's well-documented association is with turmeric adulteration.

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**103.** (c) Sodium benzoate

Sodium benzoate is a common food preservative effective in acidic environments, thus frequently used in fruit juices, carbonated beverages, and pickles to inhibit microbial growth. Tartaric acid mainly adjusts acidity, ethylene dibromide is a

fumigant, and sodium thiosulfate is not typically used as a preservative. Hence, sodium benzoate is the standard choice among these options for fruit juice preservation.

**104.** (c) Fungus

Aflatoxins are mycotoxins predominantly produced by the fungi Aspergillus flavus and Aspergillus parasiticus, often contaminating stored grains, nuts, and other food products under warm, humid conditions. They pose serious health risks, including hepatotoxicity and carcinogenic potential. Algae, bacteria, or protozoa are not known to synthesize aflatoxins.

**105.** (a) Australia

Research teams in Australia's "Eliminate Dengue" (now "World Mosquito Program") pioneered the use of Wolbachia pipientis strains to infect Aedes aegypti, which transmit dengue, chikungunya, and other viruses. Wolbachia can shorten mosquito lifespans and interfere with viral replication, potentially reducing disease spread. Although other countries have studied similar approaches, the widely publicized field trials began in Australia.

**106.** (c) National Aeronautics and Space Administration

The Spitzer Space Telescope (launched in 2003) was a NASA mission, part of its Great Observatories program (alongside Hubble, Chandra, and Compton). Designed to study the universe in infrared wavelengths, Spitzer has provided valuable observations of distant galaxies, star-forming regions, and exoplanets. It is not operated by ESA, ISRO, or the Western European Union.

**107.** (c) Both 1 and 2

Mesenchymal stem cells (MSCs) are indeed found in multiple tissues, including bone marrow and umbilical cord tissue (especially the Wharton's jelly portion of the cord). Researchers have identified these MSCs as valuable for regenerative medicine due to their capacity for differentiation and immune-modulatory properties. Thus, both statements accurately describe known sources of mesenchymal stem cells.

**108.** (c) Name of a hydrocarbon block

"KG-D6" refers to the Krishna-Godavari D6 block off India's eastern coast, known for its offshore oil and natural gas fields. It has been prominently in the news for exploration, production activities, and policy discussions around India's hydrocarbon resources. It is neither an e-governance software, supercomputer, nor a mini-satellite.

**109.** (d) Neither 1 nor 2

The Prevention of Food Adulteration (PFA) Act in India was originally enacted in 1954, not 1972, making statement 1 incorrect. Furthermore, that older Act provided fines and imprisonment for severe adulteration but did not stipulate a maximum penalty of life imprisonment; typically, the upper limits were less than that. Hence, statement 2 is also incorrect. Consequently, neither statement is correct.

**110.** (b) Iran

Iran successfully launched its first domestically built satellite, called "Omid," in early 2009, marking a significant milestone in its space program. This event drew worldwide attention and signaled Iran's entry into independent satellite deployment. Egypt, Saudi Arabia, and Libya were not similarly noted for a first indigenously developed and launched satellite at that point in time.

**111.** (d) Neither 1 nor 2

Standard capsule endoscopy cameras typically pass through the gut by peristalsis and are not actively steered externally using magnetic guidance (at least not in routine practice when this question was framed). Moreover, the commonly used "pill cameras" take images at around 2–6 frames per second, though newer technologies can vary. The claim of 12 images per second was not typical of widely adopted early systems. Hence, neither statement accurately describes standard pill endoscopy.

**112.** (d) Prime Minister

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The National Disaster Management Authority (NDMA) was established under the Disaster Management Act of 2005. It functions as the apex body for disaster management in India. By statute, the Prime Minister of India serves as its ex officio Chairperson. This arrangement underscores the high-level coordination required for disaster preparedness and response across the nation.

**113.** (a) Less than 30%

While agriculture historically dominated India's GDP, its share has gradually declined over the decades. By around the early 2000s, agriculture and allied sectors accounted for under 30% of India's GDP (and it has continued to decrease since). The economy's growing industrial and service sectors have surpassed agriculture in terms of total economic contribution, even though agriculture remains crucial for employment.

**114.** (b) India

India is often cited as having the world's largest total livestock population when combining cattle, buffaloes, goats, sheep, etc. China has the largest pig population, but India's overall livestock figures place it at or near the top globally. The question typically refers to official data that rank India number one in total livestock headcount.

**115.** (c) 2015

The 2002 National Health Policy set an ambitious target to eliminate Lymphatic Filariasis by 2015, in line with global goals. This initiative involved mass drug administration (with DEC and Albendazole) in endemic areas. Although full elimination was not achieved on schedule, the official policy statement had declared 2015 as the intended target year.

**116.** (d) Krishna

The Bhima River originates in the Western Ghats (near Bhimashankar in Maharashtra) and flows southeast. It is a major tributary of the Krishna River system in Peninsular India. This confluence influences agriculture and water usage in states like Maharashtra and Karnataka.

**117.** (c) Ministry of Health and Family Welfare

The Codex Alimentarius Commission, a global body under the FAO and WHO, sets international food standards. In India, the National Codex Contact Point is under the Ministry of Health and Family Welfare (via the Food Safety and Standards Authority of India). This ensures alignment of India's health and safety policies with international norms.

**118.** (b) Western Ghats of South India

Tropical rainforests in India occur mainly in the Western Ghats and parts of the northeastern states (e.g., Assam and Meghalaya). The Western Ghats' warm, humid climate supports evergreen forests, biodiversity hotspots, and high annual rainfall. The Eastern Ghats, Satpura range, and Vindhya–Satpura junction have different forest types, generally drier or deciduous.

**119.** (c) Pest resistant variety of cotton developed by genetic engineering

Bt cotton is genetically modified to express a toxin from the bacterium Bacillus thuringiensis that kills specific insect larvae (particularly bollworms). It reduces the need for chemical pesticides and is the first major GM crop widely adopted in India. It is not specifically bred for drought resistance, yield alone, or simply as a hybrid.

**120.** (c) 1 and 3

Bhadrachalam in Telangana lies on the banks of the Godavari River, and Omkareshwar in Madhya Pradesh is on the Narmada. However, Badrinath is situated along the Alaknanda River, not the Bhagirathi. The Bhagirathi meets the Alaknanda at Devprayag to form the Ganga. Thus, pairs 1 and 3 are correct, while 2 is not.

END

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(c) Early onset of renal failure
(d) Response to steroids

**43.** In which one of the following conditions, is a renal biopsy contraindicated ?
(a) Acute renal failure
(b) Uncontrolled Hypertension
(c) Nephritic syndrome
(d) Isolated Hematuria

**44.** The following are true about benign paroxysmal positional vertigo except :
(a) Fatigability
(b) Good reproducibility
(c) Habituation
(d) Latency

**45.** The following are common causes of seizures in adults older than 60 years of age except :
(a) Cerebrovascular disease
(b) Central nervous system neoplasia
(c) Degenerative disease
(d) Mesial temporal lobe sclerosis

**46.** The typical CSF profile in cases of viral meningitis after 48 hours of onset is
(a) Lymphocytic pleocytosis, normal glucose level, normal or slightly elevated protein level
(b) Neutrophilic pleocytosis, raised glucose level, normal protein level
(c) Lymphocytic pleocytosis, low glucose level, low protein level
(d) Neutrophilic pleocytosis, normal glucose level, elevated protein level

**47.** Cranial nerve most commonly involved in posterior communicating artery aneurysm is
(a) Occulomotor
(b) Facial
(c) Optic
(d) Trigeminal

**48.** All the following drugs are known to cause pseudotumour cerebri except :
(a) Gentamycin
(b) Tetracycline
(c) Vitamin A
(d) Oral contraceptive pills

**49.** A 35-year-old man presents with daily headache. He describes two attacks per day over the last 3 weeks. Each attack lasts about an hour and awakens him from sleep. The patient has noticed associated tearing and reddening of the right eye as well as nasal stuffiness. The pain is deep, excruciating, and limited to the right side of the head. The neurological examination is normal. What is the most likely diagnosis ?
(a) Migraine headache
(b) Tension headache
(c) Cluster headache
(d) Brain tumour

**50.** In which of the following conditions is cardiac involvement not a usual feature ?
(a) Facio-scapulo-humeral dystrophy
(b) Duchenne's muscular dystrophy
(c) Friedreich's ataxia
(d) Myotonic dystrophy

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**51.** Drugs associated with ischemic stroke include the following except :
(a) Cocaine
(b) Oral contraceptives
(c) Amphetamines
(d) Barbiturates

**52.** A 25-year-old man presents with fever and altered sensorium. The CSF analysis revealed :

| **Pressure** | **Raised** |
|---|---|
| Appearance | Opalescent and on standing cobweb formation seen |
| Protein | 220 mg% |
| Sugar | 30 mg% |
| Cells | 1250 per field mostly lymphocytes |
| Globulin | Positive |

Which one of the following is the most likely diagnosis ?
(a) Meningococcal meningitis

**11.** Which one among the following is the place of origin of Narmada river?
(a) Amarkantak
(b) Bilaspur
(c) Chitrakoot
(d) Jabalpur

**12.** As per our National Population Policy 2000, the long-term objective is to achieve the population stability by which one of the following years?
(a) 2025
(b) 2035
(c) 2045
(d) 2055

**13.** What is Jatropha curcas, that is often in the news?
(a) Genetically modified cotton plant
(b) Protein rich wheat plant developed by India
(c) Plant used for production of bio-diesel
(d) Hybrid between tomato and potato

**14.** Which among the following National Highway routes is the longest?
(a) Agra – Mumbai
(b) Chennai – Thane
(c) Kolkata – Hajira
(d) Pune – Machilipatnam

**15.** Which among the following has the primary function of distributing the revenue between the Centre and States in India?
(a) Planning Commission
(b) Finance Commission
(c) Inter-State Council
(d) Department of Expenditure in the Central Government

**16.** Consider the following statements :
1. In India, every State has its own High Court
2. In India, the judges of the High Court are appointed by the Governor of the State concerned

Which of the statements given above is/are correct ?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**17.** Allocation of Business in Government of India is done by
(a) Cabinet Secretariat
(b) Prime Minister's Office
(c) Lok Sabha Secretariat
(d) Ministry of Parliamentary Affairs

**18.** Which one of the following is not a greenhouse gas?
(a) Carbon monoxide
(b) Methane
(c) Nitrous oxide
(d) Water vapour

**19.** Who of the following is the ex-officio Chairman of the Rajya Sabha ?
(a) The President of India
(b) The Speaker of the Lok Sabha
(c) The Vice-President of India
(d) The Union Minister for Parliamentary Affairs

**20.** Match List I with List II and select the correct answer using the code given below the lists :

| | **List I (Power Plant)** | | **List II (State)** |
|---|---|---|---|
| A | Chandrapur | 1 | Andhra Pradesh |
| B | Kundah | 2 | Maharashtra |
| C | Lower Sileru | 3 | Orissa |
| D | Talcher | 4 | Tamil Nadu |

Code :
(a) A-1 B-3 C-2 D-4
(b) A-2 B-4 C-1 D-3
(c) A-4 B-1 C-2 D-3
(d) A-3 B-1 C-2 D-4

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crystals in synovial fluid
(d) Presence of monosodium urate crystals in synovial fluid

**65.** Increased anion gap is found in the following disorders except :
(a) Diabetic ketoacidosis
(b) Starvation ketosis
(c) Renal tubular acidosis
(d) Lactic acidosis

**66.** The following features are correct in the case of Syndrome of Inappropriate Anti-Diuretic Hormone (SIADH) except :
(a) Low-normal plasma urea
(b) Low serum sodium
(c) High plasma osmolality
(d) Urinary sodium not minimally low

**67.** Regarding measles, which one of the following statements is not correct ?
(a) It is caused by paramyxo virus infection
(b) Rash is usually vesicular
(c) Infection spreads by droplets
(d) Incubation period is 14 days

**68.** Secondary syphilis is characterized by the following except :
(a) Occurs 6–8 weeks after development of chancre
(b) Painful and itchy maculo-papular lesions
(c) Constitutional features are present
(d) Meningitis, hepatitis, glomerulonephritis and uveitis may occur

**69.** Which maturation stage of RBCs is infected by Plasmodium falciparum ?
(a) Reticulocyte stage only
(b) Normoblast stage
(c) Old RBC
(d) RBC of all ages

**70.** Giardiasis is characterized by the following except
(a) Abdominal discomfort and bloating
(b) Acute or chronic diarrhea
(c) Duodenum and jejunum are the prime sites of involvement
(d) Giardia cysts are resistant to heat and desiccation

**71.** Sulphasalazine is not used for the treatment of
(a) Crohn's disease
(b) Rheumatoid arthritis
(c) Sarcoidosis
(d) Ulcerative colitis

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**72.** Imipenem is co-administered with cilastin because
(a) Cilastin aids the gastrointestinal absorption of the active moiety, imipenem
(b) Cilastin inhibits β-lactamase that destroys imipenem
(c) Cilastin inhibits an enzyme in the kidney that destroys imipenem
(d) Cilastin prevents the hypoprothrombotic effect of imipenem

**73.** What is the drug of choice for CMV (Cytomegalovirus) Retinitis in patients with AIDS ?
(a) Acyclovir
(b) Gancyclovir
(c) Pentamidine
(d) Co-trimoxazole

**74.** A patient with HIV disease presents with fever, malaise and headache of acute onset. CSF examination reveals 20 cells with 80% lymphocytes, protein 100 mg/dl, sugar 35 mg/dl, and a positive India ink preparation. CT head is normal. What is the most appropriate therapy in this patient ?
(a) Amphotericin-B
(b) Amoxycillin
(c) Acyclovir
(d) Anti-tubercular drugs

**75.** In an immuno-compromised patient with local gamma(-gumma)-like tumors and granulomatous lesions of lungs, bones, brain and meninges, the most likely diagnosis is
(a) Tuberculosis

(d) Massive pulmonary embolism

**33.** A fifty-year-old woman presents with dry cough and progressive breathlessness of two years duration. Examination reveals clubbing, cyanosis and bibasilar crepts. What is the probable diagnosis ?
(a) Bronchiectasis
(b) Lung abscess
(c) Interstitial lung disease
(d) Pulmonary tuberculosis

**34.** Pleural effusion with very low glucose is characteristically seen in
(a) Malignancy
(b) Tuberculosis
(c) SLE
(d) Rheumatoid arthritis

**35.** Which one of the following is not a feature of Kartagener's syndrome ?
(a) Bronchiectasis
(b) Ciliary dyskinesia
(c) Pancreatic insufficiency
(d) Situs inversus

**36.** Which one of the following distinguishes ARDS (Acute/Adult Respiratory Distress Syndrome) from Cardiogenic pulmonary oedema ?
(a) Normal Pa $O_2$
(b) Normal pulmonary arterial pressure
(c) Normal arterial-alveolar gradient
(d) Normal Pa $CO_2$

**37.** Which one of the following statements is not correct about chronic obstructive pulmonary diseases (COPD) ?
(a) Respiratory flow rates are decreased
(b) Total lung capacity is normal or increased
(c) Residual volume is increased
(d) Vital capacity is increased

**38.** The following drugs can cause eosinophilic pneumonia except :
(a) Nitrofurantoin
(b) Amiodarone
(c) Sulfonamides
(d) Non-steroidal anti-inflammatory drugs (NSAIDs)

**39.** A 55-year-old woman presents with progressively deepening jaundice, uncontrollable pruritus, pain in the abdomen (right upper quadrant) and yellow coloured urine. Investigations revealed :

| | |
|---|---|
| Serum bilirubin | 19.5 mg% |
| S.G.P.T. | 45 IU/L |
| Serum alkaline phosphatase | 1225 IU/L |
| Prothrombin time | 25 sec |
| Urine bile pigment | Present |
| Urine urobilinogen | Absent |
| Stools | clay coloured |

What would be the most likely diagnosis ?
(a) Viral hepatitis
(b) Cirrhosis of liver
(c) Carcinoma of head of the pancreas
(d) Hepato-cellular carcinoma

**40.** A 20-year-old man presents with repeated episodes of haematemesis. There is no history of jaundice or liver decompensation. On examination the significant findings include moderate splenomegaly and presence of esophageal varices. There is no ascites or peptic ulceration. The liver function tests are normal. What is the most likely diagnosis ?
(a) Extrahepatic portal venous obstruction
(b) Noncirrhotic portal fibrosis
(c) Cirrhosis
(d) Hepatic venous outflow tract obstruction

**41.** Hyperkalemia is observed in which one of the following conditions ?
(a) Type 1 Renal tubular acidosis
(b) Type 2 Renal tubular acidosis
(c) Type 4 Renal tubular acidosis
(d) Bartter's syndrome

**42.** The following features are true about membranous glomerulopathy except :
(a) Heavy proteinuria
(b) Hyperlipidemia

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# QUESTION PAPER 2009

1. To whom does the President of India address his resignation letter?
   (a) The Prime Minister of India
   (b) The Chief Justice of the Supreme Court of India
   (c) The Speaker of the Lok Sabha
   (d) The Vice-President of India

2. In which one of the following States does the Garo community live?
   (a) Arunachal Pradesh
   (b) Nagaland
   (c) Meghalaya
   (d) Manipur

3. Which one of the following rivers of India does not form a delta?
   (a) Cauvery
   (b) Godavari
   (c) Krishna
   (d) Narmada

4. Which one of the following pairs is not correctly matched?

| | River | | Tributary |
|---|---|---|---|
| (a) | Krishna | : | Bhima |
| (b) | Godavari | : | Wardha |
| (c) | Brahmaputra | : | Kosi |
| (d) | Ganges | : | Yamuna |

5. The Earth Summit, 1992 was held at.
   (a) New York
   (b) Geneva
   (c) Kyoto
   (d) Rio de Janeiro

6. Which one of the following Indian States does not border with Bangladesh?
   (a) Assam
   (b) Meghalaya
   (c) Manipur
   (d) Tripura

7. Consider the following statements :
   1. The Consumer Protection Act, 1986 applies to all goods but not any services.
   2. The Consumer Protection Act, 1986 provides for establishing a four-tier consumer dispute redressal machinery at the national, state, district and block levels.

   Which of the statements given above is/are correct ?
   (a) 1 only
   (b) 2 only
   (c) Both 1 and 2
   (d) Neither 1 nor 2

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8. In which state is the famous pilgrimage place Hemkund Sahib located?
   (a) Himachal Pradesh
   (b) Jammu and Kashmir
   (c) Punjab
   (d) Uttarakhand

9. Which one of the following Union Ministries administers the Nutritional Programme for Adolescent Girls?
   (a) Ministry of Health and Family Welfare
   (b) Ministry of Social Justice and Empowerment
   (c) Ministry of Women and Child Development
   (d) Ministry of Housing and Urban Poverty Alleviation

10. Among the following states, which one is the major/main producer of cotton, groundnut and tobacco in India?
    (a) Gujarat
    (b) Karnataka
    (c) Uttar Pradesh
    (d) West Bengal

(b) Subarachnoid haemorrhage
(c) Cryptococcal meningitis
(d) Tuberculous meningitis

**53.** Von Willebrand's factor is synthesized in which one of the following ?
(a) Vascular endothelium
(b) Macrophages
(c) Liver
(d) Eosinophils

**54.** Which one of the following laboratory tests differentiates leukemoid reaction from chronic myeloid leukemia ?
(a) LAP (Leukocyte alkaline phosphatase)
(b) LCA (Leukocyte common antigen)
(c) MPO (Myelo peroxidase)
(d) TRAP (Tartrate resistant alkaline phosphatase)

**55.** The first-line drug therapy in chronic myeloid leukemia is
(a) Hydroxycarbamide
(b) Alpha interferon
(c) Busulphan
(d) Imatinib

**56.** Which one of the following is not consistent with the diagnosis of aplastic anemia ?
(a) Hematopoietic cells occupying < 25% of marrow space
(b) Hematopoietic cells morphology should be normal
(c) Normocytic normochromic anemia
(d) Splenomegaly

**57.** The agent of choice for controlling heparin induced bleeding is
(a) Protamine sulphate
(b) Injectable Vitamin K
(c) Whole blood
(d) Fresh frozen plasma

**58.** Thrombocytosis may be seen in the following conditions except :
(a) Idiopathic myelofibrosis
(b) Chronic myeloid leukemia
(c) Essential thrombocythemia
(d) Hypersplenism

**59.** The following are the features of β thalassemia major except :
(a) Bone marrow hyperplasia
(b) Hair-on-end appearance
(c) Splenomegaly
(d) Increased osmotic fragility

**60.** Which one of the following disorders is not associated with Carpal Tunnel Syndrome ?
(a) Diabetes mellitus
(b) Hypothyroidism
(c) Acromegaly
(d) Addison's disease

**61.** A diabetic patient in hypoglycemia does not regain consciousness despite blood glucose restoration to normal. Which one of the following is the most likely condition or explanation ?
(a) Cerebral edema
(b) Alcohol intoxication
(c) Post-ictal state
(d) Cerebral haemorrhage

**62.** Which one of the following is the most appropriate treatment of hyperthyroidism due to subacute lymphocytic thyroiditis ?
(a) Propylthiouracil
(b) Radioactive iodine ablation
(c) Subtotal thyroidectomy
(d) Beta blockers

**63.** The following are consistent with pheochromocytoma except :
(a) Episodic diarrhea
(b) Episodic flushing of skin
(c) Episodes of hypertension
(d) Paroxysm, palpitation and sweating

**64.** Most specific diagnostic finding in gout is
(a) Uric acid crystals in urine
(b) Raised serum uric acid
(c) Presence of calcium pyrophosphate

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**21.** In the bioaccumulation of DDT in the aquatic food chain of Plankton → Clams → Fish → Fish-eating birds, which group of organisms exhibits highest concentration of DDT (in their bodies)?
(a) Plankton
(b) Clams
(c) Fish
(d) Fish-eating birds

**22.** Among the following, which one is a major contributor to acid rains ?
(a) Carbon dioxide
(b) Carbon monoxide
(c) Nitric oxide
(d) Sulphur dioxide

**23.** In the composition of normal dry air of the atmosphere at ground level in an unpolluted area, which one among the following is found in highest concentration ?
(a) Carbon dioxide
(b) Hydrogen
(c) Methane
(d) Nitrous oxide

**24.** In which one of the following cities is the headquarters of the National Fisheries Development Board located?
(a) Chennai
(b) Cochin
(c) Hyderabad
(d) Kolkata

**25.** Under the Rajiv Gandhi Shramik Kalyan Yojana, in case of closure of a factory/establishment, one gets Unemployment Allowance for
(a) 6 months
(b) 9 months
(c) 12 months
(d) 18 months

**26.** The distinct golden colour in transgenic golden rice is due to the presence of
(a) Riboflavin
(b) β-carotene
(c) Vitamin B12
(d) Xanthophyll

**27.** Recently, a substance isolated from the leaves of which one of the following plants is able to induce death of cancer cells in chronic myeloid leukaemia ?
(a) Aloe
(b) Betel
(c) Bryophyllum
(d) Mint

**28.** The Indian Institute of Crop Processing Technology is under the Union Ministry of
(a) Agriculture
(b) Food Processing Industries
(c) Science and Technology
(d) Micro, Small and Medium Enterprises

**29.** Recently, the scientists of which one of the following countries created the first engineered living human nervous tissue construct, a mini-nervous system in culture, which can be transplanted en masse ?
(a) Germany
(b) Japan
(c) UK
(d) USA

**30.** Which one of the following is not a Central Public Sector Enterprise ?
(a) IOC
(b) Hindalco Industries
(c) NTPC
(d) SAIL

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**31.** Kerley B Lines in the chest X-ray of a patient is a radiological feature of
(a) Respiratory failure
(b) Heart failure
(c) Renal failure
(d) Liver failure

**32.** Pulsus paradoxus can be seen in the following clinical states except :
(a) Pericardial tamponade
(b) Acute severe asthma
(c) Acute myocardial infarction

(b) Leprosy
(c) Sarcoidosis
(d) Cryptococcosis

**76.** Which one of the following is not a fungal infection ?
(a) Chromomycosis
(b) Pheohyphomycosis
(c) Actinomycosis
(d) Blastomycosis

**77.** Pyridoxine hypervitaminosis causes
(a) Polyneuropathy
(b) Hypercalcemia
(c) Liver damage
(d) Renal failure

**78.** With regard to vitiligo, which one of the following is not correct ?
(a) Generalized vitiligo is often symmetrical
(b) Trauma and sunburn may precipitate vitiligo
(c) It is a congenital condition
(d) Focal areas of melanocyte loss are observed

**79.** The following diseases are characterized by bullous eruptions except :
(a) Porphyria cutanea tarda
(b) Variegate porphyria
(c) Dermatitis herpetiformis
(d) Lichen planus

**80.** Which one of the following features differentiates lepromatous leprosy from tuberculoid leprosy ?
(a) Absence of infectivity of affected patients
(b) Organisms are scanty in number
(c) Blood-borne spread from the dermis throughout the body
(d) Anaesthetic hypopigmented skin macules and plaques

**81.** Recurrent painful orogenital ulcers with arthritis is most likely due to
(a) Gonorrhea
(b) Syphilis
(c) Reiter's syndrome
(d) Behcet's syndrome

**82.** Which one of the following is a characteristic feature of drug induced lupus ?
(a) Antihistone antibodies
(b) Anti Ro antibodies
(c) Anti La antibodies
(d) Anti ds DNA antibodies

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**83.** What is the most common histological type of nephritis seen in systemic lupus erythematosis (SLE)?
(a) Mesangial
(b) Focal proliferative
(c) Diffuse proliferative
(d) Membranous

**84.** The following modes of therapy may be useful for treatment of obsessive compulsive disorder except :
(a) Fluoxetine
(b) Clomipramine
(c) Behaviour therapy
(d) Electroconvulsive therapy

**85.** Which one of the following conditions is not correct in case of bulimia nervosa ?
(a) Recurrent bouts of binge eating
(b) Lack of self-control over eating during binges
(c) Self-induced vomiting or dieting after binge
(d) Weight gain

**86.** Fear of contamination, counting behaviours, and having to check and recheck are features characteristic of
(a) Panic attacks
(b) Agoraphobia
(c) Obsessive-compulsive disorder
(d) Generalized anxiety disorder

**87.** Which one of the following is not an autosomal recessive disorder ?
(a) Leber's hereditary optic atrophy
(b) Finnish nephropathy

# PAPER 2009 ANSWERS

1. (d) The Vice-President of India

Under Article 56(1)(a) of the Indian Constitution, if the President decides to resign from office before the completion of the term, the resignation letter must be addressed to the Vice-President. This is a constitutional requirement ensuring a clear line of succession and procedural clarity. As soon as the Vice-President receives and accepts the President's resignation, the vacancy is lawfully recognized, and the Vice-President can take over as Acting President if required.

2. (c) Meghalaya

The Garo people are one of the major tribes in the Northeast region of India, predominantly inhabiting the Garo Hills of Meghalaya. They have a distinct culture, language (known as Garo or A·chik), and social traditions. Although some Garo groups may be found in adjoining areas of Assam and Bangladesh, Meghalaya remains their primary home. This close cultural and geographical association makes Meghalaya the most prominent and accurate answer regarding the habitat of the Garo community.

3. (d) Narmada

While many of India's major east-flowing rivers (like the Cauvery, Godavari, and Krishna) form extensive deltas before flowing into the Bay of Bengal, the Narmada flows westward through a rift valley and empties into the Arabian Sea via an estuary. Because of the terrain and flow characteristics, it does not deposit sediment in a large deltaic region. Instead, it creates an estuary near the Gulf of Khambhat, distinguishing it from the other listed rivers that form deltas.

4. (c) Brahmaputra : Kosi

The Kosi River is actually a major tributary of the Ganges, not the Brahmaputra. Bhima is a well-known tributary of the Krishna, Wardha is a tributary of the Godavari, and the Yamuna meets the Ganges at the Triveni Sangam in Allahabad (Prayagraj). Because of this mismatch in the pairing—placing Kosi under the Brahmaputra instead of the Ganges—option (c) is identified as the incorrect pair.

5. (d) Rio de Janeiro

The 1992 Earth Summit, also known as the United Nations Conference on Environment and Development (UNCED), took place in Rio de Janeiro, Brazil. It was a pivotal gathering that resulted in significant international environmental agreements and laid the foundation for sustainable development agendas worldwide. Notable outcomes included Agenda 21, the Rio Declaration on Environment and Development, and frameworks addressing climate change and biodiversity, setting the tone for global environmental policy in the ensuing decades.

6. (c) Manipur

Assam, Meghalaya, and Tripura share a border with Bangladesh, whereas Manipur shares its international boundary with Myanmar (to the east). The northeastern region of India has several states adjacent to Bangladesh, but Manipur's boundary alignment is strictly with Myanmar, setting it apart. Hence, among the given choices, Manipur does not have a common border with Bangladesh, making it the correct answer.

7. (d) Neither 1 nor 2

Statement 1 is incorrect because the Consumer Protection Act, 1986 covers not only goods but also services (like banking, transport, insurance, etc.). Statement 2 is also incorrect because the Act establishes a three-tier machinery (National Commission, State Commissions, and District Forums), not a four-tier structure including the block level. Since both statements misrepresent the scope and framework of the Act, the correct choice is "Neither 1 nor 2."

8. (d) Uttarakhand

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(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**97.** A 23-year-old individual who believes in megavitamins therapy develops severe headache. Fundoscopy reveals papilloedema. The likely cause for this problem is
(a) Vitamin $B_{12}$ intoxication
(b) Vitamin A intoxication
(c) Vitamin E intoxication
(d) Vitamin K intoxication

**98.** A twenty-year-old male is presented with end stage renal failure. Since 13 years of age, he has had progressive renal insufficiency initially with episodes of painless haematuria. He also has progressive deafness. His brother suffers from similar illness. What is the most likely diagnosis ?
(a) Alport syndrome
(b) Henoch-Schönlein vasculitis
(c) Familial lupus
(d) Wegener's granulomatosis

**99.** The following are risk factors for developing cholangiocarcinoma except :
(a) Choledochal cyst
(b) Cholelithiasis
(c) Liver flukes
(d) Working in the rubber industry

**100.** Which one of the following is most commonly associated with internuclear ophthalmoplegia ?
(a) Congenital nystagmus
(b) Spino-cerebellar degeneration
(c) Multiple sclerosis
(d) Progressive supranuclear palsy

**101.** A two-month-old infant is brought to the hospital emergency with marked respiratory distress. On examination, the infant has cyanosis and bilateral crepitations. Heart rate is 180/min, respiratory rate 56/min and the liver span 7-5 cm. The child has had repeated episodes of fever, cough and respiratory distress since the time of birth. Cardiovascular examination reveals a grade III ejection systolic murmur in left parasternal area and the chest X-ray reveals cardiomegaly with a narrow base and plethoric lung fields. What is the most likely diagnosis ?
(a) Congenital methemoglobinemia
(b) Transposition of great arteries
(c) Cystic fibrosis
(d) Tetralogy of Fallot

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**102.** Abnormalities of copper metabolism are implicated in the pathogenesis of all the following except :
(a) Wilson's Disease
(b) Menkes' Kinky-hair Syndrome
(c) Indian Childhood Cirrhosis
(d) Keshan disease

**103.** A two-year-old boy is brought to emergency with severe anemia (Hb = 2 gm%) and features of congestive heart failure. The most appropriate immediate therapy for this boy would be
(a) Packed cell transfusion
(b) Partial exchange transfusion
(c) Whole blood transfusion
(d) Parenteral iron injection

**104.** Consider the following statements regarding thyroid hormones :
1. Majority of the circulating $T_3$ remains in bound form.
2. Only 50% of the circulating $T_3$ is secreted by thyroid.
3. TSH estimation is not a sensitive test for diagnosis of primary hypothyroidism.
4. Fetal pituitary-thyroid axis is dependent to a large extent on maternal pituitary-thyroid axis.

Which of the statements given above is/are correct ?
(a) 1 only
(b) 1 and 2 only
(c) 2 and 4 only
(d) 1, 2, 3 and 4

recommends how taxes collected by the Union are to be shared among the Centre and the various States. It studies factors such as population, fiscal needs, and developmental disparities, then proposes a formula for revenue distribution. While bodies like the erstwhile Planning Commission or the Department of Expenditure deal with various aspects of budgeting and planning, the explicit role of dividing tax proceeds constitutionally belongs to the Finance Commission.

**16.** (d) Neither 1 nor 2

Statement 1 is incorrect because some States share High Courts (e.g., Punjab and Haryana share one in Chandigarh), so not every State has a separate High Court. Statement 2 is also incorrect since High Court judges are appointed by the President of India, not by the Governor, following a constitutional process involving the collegium system. Therefore, both statements fail to reflect the actual constitutional and judicial structures in India.

**17.** (a) Cabinet Secretariat

The Government of India (Allocation of Business) Rules and the Government of India (Transaction of Business) Rules lay out which ministry/department handles various responsibilities. The Cabinet Secretariat, functioning directly under the Prime Minister, coordinates these matters. It plays a pivotal role in streamlining and distributing tasks among ministries, ensuring coherent governance and smooth inter-ministerial cooperation. Though the PMO, Lok Sabha Secretariat, and the Ministry of Parliamentary Affairs have important roles, formal allocation of business falls under the Cabinet Secretariat's jurisdiction.

**18.** (a) Carbon monoxide

Key greenhouse gases that trap heat in the Earth's atmosphere include carbon dioxide, methane, nitrous oxide, water vapor, and others. Carbon monoxide (CO) does not play a significant direct role in trapping infrared radiation; instead, it can indirectly influence greenhouse gas concentrations by affecting atmospheric chemistry. Methane ($CH_4$), nitrous oxide ($N_2O$), and water vapour ($H_2O$) are well-known greenhouse gases, so CO stands out as the listed gas that is not classified as a direct greenhouse gas.

**19.** (c) The Vice-President of India

Article 64 of the Indian Constitution states that the Vice-President of India shall be ex-officio Chairman of the Rajya Sabha. This means that by virtue of holding the office of Vice-President, the individual automatically becomes the Chairman of the upper house of Parliament. The Vice-President presides over its sessions and ensures the proceedings are conducted in an orderly manner. Neither the President nor any minister can occupy this position in an ex-officio capacity.

**20.** (b) A-2 B-4 C-1 D-3

Chandrapur (A) is located in Maharashtra (2).

1. Kundah (B) is a hydroelectric power station in Tamil Nadu (4).
2. Lower Sileru (C) is in Andhra Pradesh (1).
3. Talcher (D) is in Odisha (formerly Orissa) (3).

These power plants lie in different states, reflecting India's varied energy infrastructure. Matching each plant to its respective state yields the correct combination A→2, B→4, C→1, D→3.

**21.** (d) Fish-eating birds

DDT and similar persistent organic pollutants become more concentrated (biomagnify) as they move up the food chain. Although plankton, clams, and fish absorb DDT, top predators—such as fish-eating birds—accumulate the highest levels. Each step in the chain ingests and retains residues from the previous level, leading to a cumulative effect. Consequently, organisms at the apex, like fish-eating birds, display the greatest concentration of DDT, posing serious risks to their reproductive health and survival.

**22.** (d) Sulphur dioxide

Acid rain primarily results from emissions of sulphur dioxide ($SO_2$) and nitrogen oxides ($NO_x$). When $SO_2$ enters the atmosphere and combines with water vapor, it forms sulphuric acid, which then falls as acid rain. Nitric oxide can also

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**114.** A family of a child just diagnosed with acute lymphoblastic leukemia asks about the child's prognosis. Which of the following is a poor prognostic indicator ?
(a) Presence of mediastinal mass
(b) Age between 1 and 10 years
(c) Hyperploidy with more than 50 chromosomes
(d) WBC count less than 50,000/mm$^3$ at diagnosis

**115.** Consider the following :
1. Kerosene poisoning
2. Organo-phosphorus poisoning
3. Corrosive poisoning
4. Iron poisoning
(a) 1 only
(b) 1 and 3 only
(c) 2 and 4 only
(d) 1, 2, 3 and 4

**116.** Which one of the following is not correct about hypernatremic dehydration ?
(a) Neurological complications are more common.
(b) The most appropriate fluid for correction is N/2 – N/4 normal saline.
(c) The dehydration should be corrected over 12 hours.
(d) The skin has a doughy feel.

**117.** What is the correct composition of the standard maintenance solution for intravenous administration in children?
(a) 5% dextrose, 25 m Eq/L of sodium, 20 m Eq/L of potassium
(b) 10% dextrose, 25 m Eq/L of sodium, 30 m Eq/L of potassium
(c) 5% dextrose, 40 m Eq/L of sodium, 20 m Eq/L of potassium
(d) 10% dextrose, 40 m Eq/L of sodium, 30 m Eq/L of potassium

**118.** Which of the following is not the correct sign of good attachment of a baby to the breast?
(a) Baby's mouth wide open
(b) Lower areola more visible
(c) Baby's lower lip everted
(d) Baby's chin touching the breast

**119.** Which one of the following is not a characteristic of tuberous sclerosis?
(a) Seizures
(b) Adenoma sebaceum
(c) X-linked recessive inheritance
(d) Shagreen patches

**120.** The 'a' wave of jugular venous pulse is produced by
(a) Atrial relaxation
(b) Atrial systole
(c) Atrial diastole
(d) Rapid venous filling

END

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**105.** Which of the following is the most common clinical manifestation of Human Parvovirus B 19 (HPV-B 19) infection ?
(a) Aplastic crisis in hemolytic anemia patients
(b) Anemia in neonatal period
(c) Erythema infectiosum
(d) Hydrops fetalis

**106.** Consider the following behavioural conditions in a child of school age :
1. Fidgets with hands or squirms in seat
2. Easily distracted by extraneous stimuli
3. Often has difficulty awaiting turn
4. Does not seem to listen when spoken to directly

Which of the above diagnostic criteria are suggestive of Inattention (attention deficit) in a child ?
(a) 1 and 2 only
(b) 1 and 3 only
(c) 2 and 4 only
(d) 1, 2, 3 and 4

**107.** A new-born baby develops cyanosis on day three of life. On auscultation, there is a systolic murmur. Echocardiography reveals a cyanotic heart disease in the baby. Which one of the following drugs can be administered to prolong the life of the baby, pending intervention ?
(a) Indomethacin
(b) Ibuprofen
(c) Prostaglandin $E_1$
(d) Propanolol

**108.** Consider the following clinical features in a full term neonate :
1. Rate of rise of bilirubin < 10 mg/dl/24 hours
2. Onset of jaundice at 48 hours of age
3. Clay coloured stools
4. Jaundice persisting on day 5

Which of the above clinical features is/are consistent with physiological jaundice ?
(a) 1 only
(b) 1 and 3 only
(c) 2 and 4 only
(d) 1, 2, 3 and 4

**109.** A new-born baby presents with shock, hyperkalemia and hypoglycemia. What is the most likely diagnosis?
(a) Septicemia
(b) Inborn error of metabolism
(c) Diabetes mellitus
(d) Congenital adrenal hyperplasia

**110.** If a five-year-old child suddenly develops stridor, which one of the following would be the most likely diagnosis ?
(a) Laryngomalacia
(b) Acute laryngo-tracheobronchitis
(c) Foreign body aspiration
(d) Acute epiglottitis

**111.** With reference to a malnourished child, the following statements are correct except :
(a) Skin and mucosa are not effective barriers to infection.
(b) There is impairment of chemotaxis associated with defective candidicidal, bactericidal capacities of polymorphs.
(c) There is impairment of cell mediated immunity and delayed hypersensitivity.
(d) There is impaired humoral response to immunizing agents and reduced number of β-cells.

**112.** Which one of the following is not a feature of Turner's syndrome ?
(a) Short stature
(b) Microphthalmia
(c) Coarctation of aorta
(d) Lymphedema

**113.** Which one of the following is not a feature of congenital hypertrophic pyloric stenosis ?
(a) More common in males
(b) Projectile vomiting
(c) Diarrhea
(d) Malnutrition

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Hemkund Sahib (formally known as Gurudwara Shri Hemkund Sahib) is a revered Sikh pilgrimage site situated in the Garhwal Himalayas of Uttarakhand. Surrounded by seven snow-capped peaks, it sits near the Valley of Flowers and remains inaccessible during winter due to heavy snowfall. Its location in the Chamoli district has made it an iconic spiritual destination for devotees who trek through picturesque, high-altitude trails to reach this sacred lake and Gurudwara.

**9.** (c) Ministry of Women and Child Development

The Ministry of Women and Child Development is primarily responsible for formulating and executing policies and programs focused on women's and children's welfare. Under various schemes such as the Integrated Child Development Services (ICDS) and supplementary programs, the ministry addresses adolescent nutrition, health education, and welfare. Since adolescent girls fall under this broader mandate for child and women's development, the "Nutritional Programme for Adolescent Girls" is administratively handled by this specific ministry.

**10.** (a) Gujarat

Gujarat is one of India's largest producers of several commercial crops, especially cotton, groundnut, and tobacco. The state's climate, soil conditions, and agricultural infrastructure are well-suited for these cash crops. Saurashtra and other regions in Gujarat have become prominent for large-scale cultivation and processing of groundnut and cotton. Gujarat also has a significant tobacco farming industry. Consequently, among the given options, Gujarat consistently ranks at or near the top in national production statistics for these crops.

**11.** (a) Amarkantak

The Narmada River begins its journey at Amarkantak, a pilgrimage town in the Maikal Hills of Madhya Pradesh. Amarkantak is a plateau region where the Vindhya and Satpura ranges meet, forming the source region for both the Narmada and the Son Rivers. Known for its natural beauty, Amarkantak is a sacred site for Hindus, and the Narmada's unique westward flow toward the Arabian Sea begins here, making it a significant geographical and cultural landmark.

**12.** (c) 2045

India's National Population Policy (NPP) 2000 outlined diverse goals related to reducing fertility rates, improving healthcare infrastructure, and enhancing maternal and child health. The policy explicitly states 2045 as the long-term target year to achieve population stabilization—meaning attaining a level where births and deaths balance, and overall population levels become more sustainable. This timeline allows for implementing health, education, and empowerment measures to mitigate population growth pressures while also striving for holistic development goals.

**13.** (c) Plant used for production of bio-diesel

Jatropha curcas is a tropical shrub whose seeds contain a high percentage of non-edible oil suitable for biodiesel. Governments and environmentalists have focused on Jatropha as a renewable energy source that may reduce dependency on fossil fuels. Its cultivation can be done on marginal or wasteland, potentially providing economic benefits to rural communities. The plant's oil can be processed into biodiesel used in engines with minimal modification, underscoring its popularity in various biofuel initiatives.

**14.** (c) Kolkata – Hajira

National Highway routes in India differ in length based on their origin and destination. The route from Kolkata (in West Bengal) to Hajira (near Surat in Gujarat) spans a considerable distance across the breadth of the country, making it longer than the other listed routes. This highway corridor, historically referred to as NH-6 in older numbering, traverses multiple states, facilitating major cross-country trade and transport. Consequently, it ranks as the longest among the given route options.

**15.** (b) Finance Commission

Constituted under Article 280 of the Indian Constitution, the Finance Commission

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(c) Renal tubular acidosis
(d) Haemochromatosis

**88.** Which one of the following is most characteristic of Elapidae snake envenomation ?
(a) Bleeding manifestation
(b) Neuro-paralytic symptoms
(c) Rhabdomyolysis
(d) Cardiotoxicity

**89.** A 28-year-old male patient is brought to casualty in comatose state, with pin-point pupils, reduced respiratory rate and bradycardia. What is the most likely diagnosis ?
(a) Tricyclic antidepressant poisoning
(b) Opioid poisoning
(c) Benzodiazepine poisoning
(d) Organophosphorus poisoning

**90.** Which one of the following is a nucleotide reverse transcriptase inhibitor ?
(a) Ritonavir
(b) Indinavir
(c) Tenofovir
(d) Nelfinavir

**91.** Which one of the following definitions best fits the term enthesitis ?
(a) Inflammation at the site of tendinous or ligamentous insertion into bone
(b) Inflammation of the periarticular membrane lining the joint capsule
(c) Inflammation of a sac-like cavity near a joint that decreases friction
(d) A palpable vibratory or crackling sensation elicited with joint motion

**92.** The following are characteristic of tumour lysis syndrome except :
(a) Hyperkalemia
(b) Hypercalcemia
(c) Hyperuricemia
(d) Hyperphosphatemia

**93.** Which one of the following is the most common site for a fracture associated with osteoporosis ?
(a) Femur
(b) Hip
(c) Radius
(d) Vertebra

**94.** Consider the following statements with regard to sexual transmission of HIV :
1. Male-to-female transmission is many times more efficient than female-to-male transmission.
2. Non-ulcerative inflammatory STDs such as those caused by Chlamydia trachomatis and Trichomonas vaginalis do not increase the risk of transmission of HIV infection.
3. Infections with Treponema pallidum, Haemophilus ducreyi and HSV increase the risk of transmission of HIV infection.
4. Oral sex is a much less efficient mode of transmission of HIV than is receptive anal intercourse.

Which of the statements given above are correct ?
(a) 1 and 3 only
(b) 1, 3 and 4 only
(c) 2 and 4 only
(d) 1, 2, 3 and 4

**95.** A 35-year-old lady is diagnosed to have post-partum hypopituitarism. The correct order of hormone substitution in her case would be :
(a) Thyroxin, steroids, oral contraceptives
(b) Glucocorticoids, thyroxin, oral contraceptives
(c) Oral contraceptives, thyroxin, glucocorticoids
(d) Glucocorticoids, oral contraceptives, thyroxin

**96.** Consider the following statements :
1. Thalidomide is the drug of choice for Erythema Nodosum Leprosum.
2. It is an immuno-modulatory and anti-inflammatory drug.

Which of the statements given above is/are correct ?
(a) 1 only

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contribute, but sulphur dioxide from coal-based power plants, industrial processes, and diesel fuels is recognized as one of the leading causes. Carbon dioxide, though responsible for climate change, plays a minimal direct role in acid rain formation compared to $SO_2$.

**23.** (a) Carbon dioxide

While nitrogen (~78%) and oxygen (~21%) dominate the bulk of Earth's air, minor gases also exist. Among the listed greenhouse or trace gases—carbon dioxide, hydrogen, methane, and nitrous oxide—carbon dioxide has the highest concentration (roughly 0.04% or 400 ppm). Methane, nitrous oxide, and hydrogen all have concentrations in parts per million or even lower. Consequently, in normal, unpolluted conditions, $CO_2$ surpasses the others in typical atmospheric abundance within that group.

**24.** (c) Hyderabad

The National Fisheries Development Board (NFDB) is an autonomous organization under the Department of Fisheries, Ministry of Fisheries, Animal Husbandry & Dairying. Headquartered in Hyderabad (Telangana), it coordinates efforts to enhance fish production, strengthen infrastructure, and promote sustainable aquaculture and allied activities. Although major coastal cities like Chennai, Cochin, and Kolkata are significant fishery hubs, the NFDB's administrative and operational center is in Hyderabad, facilitating nationwide policy implementation.

**25.** (c) 12 months

Rajiv Gandhi Shramik Kalyan Yojana is a scheme under the Employees' State Insurance (ESI) framework that grants an unemployment allowance to insured workers who lose their jobs due to factory closure or retrenchment. The allowance is payable for up to one year (12 months), provided they meet certain eligibility criteria. During this period, the worker also retains entitlement to ESI medical benefits. This policy offers financial relief and healthcare coverage to workers impacted by involuntary job loss.

**26.** (b) β-carotene

Golden rice is genetically engineered to produce β-carotene (a precursor to Vitamin A) in the rice endosperm. This substance imparts a yellow-orange or "golden" hue to the grains. The main goal of golden rice is to address Vitamin A deficiency in populations dependent on rice as a staple. By boosting β-carotene, the rice can help mitigate ailments resulting from inadequate dietary Vitamin A, such as night blindness and immune system deficiencies.

**27.** (b) Betel

Research has identified bioactive compounds in betel leaves (Piper betle) that show promise in inducing apoptosis (programmed cell death) in certain cancer cell lines, including chronic myeloid leukemia cells. These findings underscore the potential of traditional medicinal plants in modern oncology. While substances from other leaves (Aloe, Bryophyllum, Mint) are also studied for health benefits, betel leaf extracts have garnered particular interest for their anticancer properties in recent scientific investigations targeting leukemia cells.

**28.** (b) Food Processing Industries

The Indian Institute of Crop Processing Technology (IICPT), based in Thanjavur (Tamil Nadu), falls under the ambit of the Ministry of Food Processing Industries. It focuses on research, education, and extension activities in the domain of post-harvest technology and food processing. By being part of the Ministry of Food Processing Industries, the institute receives policy direction and support to innovate and address various challenges—thereby enhancing value-addition, reducing crop wastage, and fostering entrepreneurship in the food processing sector.

**29.** (d) USA

American researchers have made strides in tissue engineering by creating a functional "mini-nervous system" in vitro that can potentially be transplanted. Such scientific breakthroughs often emerge from collaborative research institutions in the United States, leveraging advanced biotechnologies and stem cell science. This innovation offers hope for treating various neurological conditions and represents a leap

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forward in regenerative medicine, where lab-grown tissues might one day restore or replace damaged structures in patients.

30. (b) Hindalco Industries

Hindalco Industries is part of the Aditya Birla Group, a major private conglomerate, and thus is not a government-owned corporation. In contrast, Indian Oil Corporation (IOC), National Thermal Power Corporation (NTPC), and Steel Authority of India Limited (SAIL) are well-known Central Public Sector Enterprises (CPSEs), with a majority stake held by the Government of India. Hindalco's ownership, management, and shareholding reflect private sector status, distinguishing it from the other listed entities.

31. (b) Heart failure

Kerley B lines are short, thin horizontal lines at the lung periphery seen on chest X-rays, typically indicating interstitial edema associated with left-sided heart failure. They represent fluid in the interlobular septa of the lungs and are an important clue in diagnosing cardiac causes of pulmonary edema rather than purely respiratory causes. Their presence helps differentiate congestive heart failure from other potential conditions where fluid accumulates in the lungs.

32. (c) Acute myocardial infarction

Pulsus paradoxus is an exaggerated drop in systolic blood pressure during inspiration. It is notably associated with pericardial tamponade (due to impaired ventricular filling), acute severe asthma, and even massive pulmonary embolism because of significant swings in intrathoracic pressure or obstructed blood flow. In acute myocardial infarction, though hemodynamics can be severely compromised, pulsus paradoxus is not a recognized feature. Hence, among the listed conditions, AMI is the exception.

33. (c) Interstitial lung disease

The key findings—progressive dyspnea over years, dry cough, bibasilar crackles ("Velcro crackles"), clubbing, and cyanosis—strongly suggest a chronic fibrotic or restrictive lung pathology. Interstitial lung diseases (ILDs), which include pulmonary fibrosis, typically present this way. Bronchiectasis often has more productive cough and recurrent infections; pulmonary TB might feature constitutional symptoms and more localized findings; lung abscess commonly shows foul-smelling sputum or localized infection signs. The gradual progression with classic basal crepitations matches ILD.

34. (d) Rheumatoid arthritis

While tubercular or malignant effusions can have moderately low glucose, rheumatoid pleural effusions are notorious for markedly low glucose levels (sometimes <30 mg/dL). The inflammation and metabolic activity triggered by rheumatoid disease in the pleura severely reduce glucose levels. This distinguishing feature, along with high LDH and low pH, helps separate a rheumatoid effusion from other causes. Hence, among the listed choices, rheumatoid arthritis is most classically associated with very low pleural fluid glucose.

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35. (c) Pancreatic insufficiency

Kartagener's syndrome is a subset of primary ciliary dyskinesia characterized by a triad: sinusitis, bronchiectasis, and situs inversus. Defects in the dynein arms of cilia lead to poor mucociliary clearance. Although this syndrome affects respiratory tract cilia extensively and includes organ reversal (situs inversus), it does not typically involve pancreatic insufficiency. Pancreatic insufficiency is more commonly associated with conditions like cystic fibrosis. Thus, "pancreatic insufficiency" is not a feature of Kartagener's syndrome.

36. (b) Normal pulmonary arterial pressure

ARDS, or non-cardiogenic pulmonary edema, arises from increased permeability in the alveolar-capillary membrane, often due to severe inflammation or injury. Unlike cardiogenic pulmonary edema (resulting from left ventricular failure), ARDS generally does not elevate pulmonary capillary wedge pressure or pulmonary arterial pressure in the early stages. Instead, the problem lies in the lung parenchyma itself. This contrast helps distinguish ARDS

(normal or only slightly raised pulmonary pressures) from fluid overload caused by heart failure (elevated pulmonary pressures).

**37.** (d) Vital capacity is increased

In COPD (including chronic bronchitis and emphysema), airflow obstruction impairs expiration, leading to air trapping and hyperinflation. Consequently, residual volume often rises and total lung capacity can be normal or even elevated. The respiratory flow rates ($FEV_1$, $FEV_1$/FVC ratio) are definitely decreased. However, vital capacity (the maximum volume of air exhaled after a full inspiration) typically decreases or remains normal in advanced disease due to trapped air and reduced elastic recoil, not increases, making (d) incorrect.

**38.** (b) Amiodarone

Eosinophilic pneumonia can arise from a variety of drugs, commonly featuring a hypersensitivity mechanism. Nitrofurantoin, sulfonamides, and even NSAIDs have documented associations with drug-induced eosinophilic lung infiltrates. Amiodarone, while capable of causing severe pulmonary toxicity (typically a chronic interstitial pneumonitis or organizing pneumonia), is not classically known for triggering eosinophilic pneumonia. Hence it is the exception among this set. Clinically, amiodarone-induced lung disease often presents with a different pathological pattern and mechanism.

**39.** (c) Carcinoma of head of the pancreas

Markedly elevated conjugated bilirubin, high alkaline phosphatase, clay-colored stools, and absent urobilinogen point to obstructive jaundice. The pain in the right upper quadrant and progressive jaundice with pruritus further suggest a mechanical blockage in the biliary pathway. Carcinoma of the head of the pancreas often compresses the common bile duct externally, producing such a presentation (painless or mildly painful obstructive jaundice). The normal-ish SGPT but highly elevated alkaline phosphatase fits a cholestatic pattern typical of extrahepatic obstruction.

**40.** (b) Noncirrhotic portal fibrosis

Noncirrhotic portal fibrosis (NCPF), sometimes called idiopathic portal fibrosis, is characterized by portal hypertension, splenomegaly, and variceal bleeding without evidence of cirrhosis or significant liver dysfunction. Patients typically have normal liver function tests and do not show ascites early on. By contrast, extrahepatic portal venous obstruction is more common in younger children, whereas cirrhosis would often present with abnormal LFTs and possibly ascites. Hence NCPF best explains splenomegaly, varices, normal LFTs, and recurrent hematemesis.

**41.** (c) Type 4 Renal tubular acidosis

Type 4 RTA is associated with decreased aldosterone production or action, leading to decreased potassium excretion in the distal nephron and resulting in hyperkalemia. This contrasts with Type 1 (distal) and Type 2 (proximal) RTA, which frequently feature hypokalemia rather than hyperkalemia. Bartter's syndrome similarly presents with hypokalemia due to defects in the thick ascending limb of the loop of Henle. Therefore, among the listed conditions, only Type 4 RTA characteristically shows elevated serum potassium levels.

**42.** (c) Early onset of renal failure

Membranous glomerulopathy (or membranous nephropathy) is a common cause of nephrotic syndrome in adults, often presenting with heavy proteinuria and hyperlipidemia. Many patients display some response to immunosuppressive therapy or steroids, though not as striking as in minimal change disease. Typically, it progresses gradually, and renal failure (if it occurs) often arises late in the disease course. Hence, "early onset of renal failure" is not a typical feature, making option (c) the exception.

**43.** (b) Uncontrolled Hypertension

Renal biopsy is an invasive procedure carrying the risk of bleeding. Uncontrolled hypertension significantly heightens this risk, as elevated arterial pressure can lead to hemorrhage at the biopsy site. Generally, blood pressure must be stabilized before attempting a biopsy. Acute renal failure, nephritic syndrome, or isolated hematuria are not absolute contraindications as long as blood pressure and coagulation

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present with this classic MLF lesion-based eye movement disorder.

**101.** (b) Transposition of great arteries

Transposition of the great arteries (TGA) commonly presents soon after birth with cyanosis. On a chest X-ray, TGA often shows a characteristic "egg on a string" or narrow mediastinum ("narrow base") and increased pulmonary vascular markings (plethoric lung fields). Infants may have repeated respiratory difficulties and signs of congestive heart failure unless mixing of blood (e.g. via an ASD, VSD, or PDA) partially compensates. Tetralogy of Fallot typically produces a "boot-shaped" heart with decreased pulmonary markings; cystic fibrosis is primarily a pulmonary disease, not a congenital heart defect.

**102.** (d) Keshan disease

Wilson'sdisease(hepatolenticulardegeneration), Menkes' kinky hair syndrome, and Indian Childhood Cirrhosis all involve disordered copper metabolism—either accumulation (Wilson's, ICC) or defective transport (Menkes'). Keshan disease, by contrast, is linked primarily to selenium deficiency and not copper. Keshan disease causes a cardiomyopathy often endemic in certain regions with low selenium content in soil. Thus, of the conditions listed, Keshan disease is unrelated to copper metabolic dysfunction.

**103.** (a) Packed cell transfusion

With a hemoglobin of only 2 g/dL plus signs of congestive heart failure, the child urgently needs to improve oxygen-carrying capacity without significantly increasing intravascular volume. Packed RBCs allow red blood cell replacement with minimal additional fluid, reducing the risk of fluid overload. Whole blood would introduce more volume, potentially worsening heart failure. Partial exchange transfusion or immediate iron injections are less effective for acute correction of both anemia and circulatory compromise.

**104.** (a) 1 only

(1) Most $T_3$ in circulation is indeed bound to proteins (TBG, albumin). (2) Typically, only ~20% of $T_3$ is directly secreted by the thyroid; the rest is peripherally converted from $T_4$, making "50%" inaccurate. (3) TSH is actually very sensitive for detecting primary hypothyroidism, so statement 3 is incorrect. (4) While maternal $T_4$ can cross the placenta to some degree, the fetal thyroid axis develops relative independence by mid-gestation, so (4) is not strictly true in the sense stated.

**105.** (c) Erythema infectiosum

Human Parvovirus B19 is the etiological agent of Erythema infectiosum ("fifth disease") in children, presenting with a "slapped cheek" rash and mild systemic symptoms. While Parvovirus B19 can indeed cause aplastic crisis in those with hemolytic anemias (e.g. sickle cell), hydrops fetalis in pregnancy, and neonatal anemia, the single most common recognized presentation in the general population—particularly in otherwise healthy children—is Erythema infectiosum.

**106.** (c) 2 and 4 only

Attention deficit hyperactivity disorder (ADHD) typically has two major clusters of symptoms: inattention and hyperactivity/impulsivity.
"Easily distracted" (2) and "Does not seem to listen" (4) reflect inattention. "Fidgeting" (1) and "difficulty awaiting turn" (3) align more with hyperactivity/impulsivity.Hence statements (2) and (4) are classic pointers toward the inattentive domain, making option (c) correct for inattention criteria.

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**107.** (c) Prostaglandin $E_1$

In many cyanotic congenital heart lesions—especially those that are duct-dependent (e.g. transposition of the great arteries, pulmonary atresia)—maintaining patency of the ductus arteriosus is critical. Prostaglandin $E_1$ ($PGE_1$) infusion keeps the duct open, ensuring adequate mixing or blood flow until definitive surgical or interventional correction is done. Indomethacin or ibuprofen closes a patent ductus arteriosus; propranolol addresses tachyarrhythmias or

the condition where clinically significant heart problems are not typically a feature.

**51.** (d) Barbiturates

Cocaine and amphetamines can cause intense vasoconstriction and sometimes accelerated atherosclerosis or vasospasm, greatly elevating the risk of ischemic stroke. Oral contraceptives, especially those with higher estrogen levels, carry an increased thrombotic risk. In contrast, barbiturates are not typically linked with causing ischemic stroke, although they can depress central nervous system activity and affect respiration. Thus, among the listed agents, barbiturates stand out as not commonly implicated in ischemic stroke.

**52.** (d) Tuberculous meningitis

A classic clue is the "cobweb" or "spider-web" pellicle formation in the CSF upon standing, along with lymphocytic predominance, elevated protein, and moderately low sugar. These findings are highly suggestive of tuberculous meningitis rather than acute bacterial (meningococcal) meningitis or subarachnoid hemorrhage. Cryptococcal meningitis also presents with lymphocytes and raised protein, but the cobweb clot and the high cell count (1250) leans strongly toward TB meningitis.

**53.** (a) Vascular endothelium

von Willebrand factor (vWF) is chiefly produced by the endothelial cells lining blood vessels (and also by megakaryocytes). It plays a vital role in platelet adhesion and carrying factor VIII. The liver is the site for many clotting factors but not the primary place for vWF production, and macrophages or eosinophils are not vWF-producing cells. This endothelial origin is key to understanding certain bleeding disorders, such as von Willebrand disease.

**54.** (a) LAP (Leukocyte alkaline phosphatase)

In a leukemoid reaction (an extreme reactive leukocytosis), the leukocyte alkaline phosphatase (LAP) score is typically high, reflecting robust enzyme activity in reactive neutrophils. In chronic myeloid leukemia, the LAP score is usually low because malignant granulocytes often lack normal enzyme activity. LCA and MPO are more general markers, and TRAP is associated with hairy cell leukemia. The LAP test thus remains the classic quick differentiator between CML and a benign leukemoid reaction.

**55.** (d) Imatinib

Imatinib mesylate (a tyrosine kinase inhibitor) revolutionized the treatment of CML by specifically targeting the BCR-ABL fusion protein produced by the Philadelphia chromosome. Older treatments like hydroxyurea, busulfan, or interferon-α might still be used in specific scenarios, but they are not first-line. Imatinib's mechanism, blocking the abnormal tyrosine kinase activity, allows for more precise disease control and better long-term outcomes.

**56.** (d) Splenomegaly

Aplastic anemia presents with a hypocellular marrow (often <25% hematopoietic cells), producing normal-looking but reduced cells (pancytopenia), including normocytic normochromic RBCs. Patients do not typically manifest splenomegaly in classical aplastic anemia. Significant splenomegaly instead suggests alternative pathologies (e.g., myelofibrosis, extramedullary hematopoiesis, or hematologic malignancies). Hence splenomegaly is inconsistent with an otherwise "empty" marrow picture of aplastic anemia.

**57.** (a) Protamine sulphate

Protamine sulphate is the specific antidote for reversing the anticoagulant effects of heparin. It binds to heparin and neutralizes its activity, rapidly correcting an elevated aPTT. Vitamin K is used for warfarin reversal, whereas whole blood or FFP could be supportive but are not first-line for direct heparin neutralization. Thus, in a patient experiencing significant hemorrhage due to heparin, protamine sulphate is the clear first choice.

**58.** (d) Hypersplenism

Thrombocytosis (elevated platelet count) is commonly encountered in myeloproliferative disorders such as chronic myeloid leukemia,

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essential thrombocythemia, and myelofibrosis. Hypersplenism, by contrast, often leads to sequestration of platelets in the spleen, causing thrombocytopenia rather than thrombocytosis. Hence, among the listed choices, hypersplenism is the condition typically associated with a lower platelet count, making it the exception here.

**59.** (d) Increased osmotic fragility

β-thalassemia major involves reduced or absent β-globin chain synthesis, leading to severe hemolytic anemia, extramedullary hematopoiesis, and distinctive skeletal changes (bone marrow expansion causing the "hair-on-end" skull appearance). Splenomegaly is also common from extramedullary hematopoiesis and red cell turnover. However, "increased osmotic fragility" is typically associated with hereditary spherocytosis, not β-thalassemia. In thalassemia, the RBC defect is different, so osmotic fragility is not markedly raised.

**60.** (d) Addison's disease

Carpal Tunnel Syndrome (CTS) can be precipitated by conditions that cause tissue swelling, fluid retention, or changes in soft tissues around the wrist—common culprits include diabetes, hypothyroidism, rheumatoid arthritis, and acromegaly. Addison's disease (primary adrenal insufficiency) does not typically produce the localized synovial or tissue changes in the carpal tunnel that lead to median nerve compression. Consequently, Addison's stands out as not commonly linked with CTS among the listed conditions.

**61.** (a) Cerebral edema

Severe or prolonged hypoglycemia can cause neuronal injury. If the patient's glucose is corrected rapidly but consciousness fails to return, one explanation is cerebral edema resulting from osmotic shifts or direct neuronal damage. This is sometimes seen in young patients with Type 1 diabetes but can occur in adults under certain circumstances as well. While other conditions (like a post-ictal state or hemorrhage) could delay recovery, acute cerebral edema or hypoglycemic brain injury is the classic teaching point here.

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**62.** (d) Beta blockers

Subacute lymphocytic (painless) thyroiditis often presents with a transient hyperthyroid phase followed by possible hypothyroid phase. Because the hyperthyroidism typically results from the passive release of preformed thyroid hormones (rather than sustained overproduction), anti-thyroid drugs (e.g., PTU) or radioactive iodine are usually not indicated. Beta blockers help alleviate adrenergic symptoms (tachycardia, tremor, anxiety) until hormone levels normalize. More invasive options like surgery are rarely needed in this self-limiting condition.

**63.** (a) Episodic diarrhea

Pheochromocytomas are catecholamine-secreting tumors that typically cause paroxysms of hypertension, headaches, palpitations, and sweating. While flushing can occur, the hallmark is more commonly pallor and sweating—though some patients do note transient flushing. Episodic diarrhea, however, is more commonly associated with conditions like carcinoid syndrome. Thus, among these listed symptoms, episodic diarrhea is least characteristic of pheochromocytoma and is the "except."

**64.** (d) Presence of monosodium urate crystals in synovial fluid

Gout is definitively diagnosed by finding needle-shaped, negatively birefringent monosodium urate (MSU) crystals in joint (synovial) fluid under polarized light. While high serum uric acid supports the clinical suspicion, it is not exclusively diagnostic because levels may be normal during acute attacks or elevated in asymptomatic individuals. Calcium pyrophosphate crystals are linked with pseudogout, not gout. Hence, MSU crystals in the joint fluid provide the most specific evidence of gout.

**65.** (c) Renal tubular acidosis

An increased anion gap typically occurs in metabolic acidoses where unmeasured anions (e.g., ketones, lactate) accumulate—such as diabetic ketoacidosis, lactic acidosis, and starvation ketosis. Renal tubular acidosis

generally produces a hyperchloremic (normal anion gap) metabolic acidosis, as the main problem is impaired acid excretion or bicarbonate reabsorption, not an accumulation of organic acids. Thus, RTA stands out as the exception among these conditions.

**66.** (c) High plasma osmolality

SIADH causes excessive ADH release, leading to water retention, dilutional hyponatremia (low serum sodium), and reduced plasma osmolality. Plasma urea is often low or low-normal, and urinary sodium is typically inappropriately high ($\geq$40 mEq/L) since the body tries to excrete excess water. A high plasma osmolality would contradict the hallmark of SIADH, making that statement incorrect. Thus, among the listed features, "high plasma osmolality" is not correct.

**67.** (b) Rash is usually vesicular

Measles (rubeola), a paramyxovirus infection, produces a characteristic maculopapular rash that usually begins on the face and spreads downward. It is transmitted via respiratory droplets and has an incubation period of roughly two weeks (about 10–14 days). The rash is not vesicular (that finding is more typical of varicella or herpes viruses). Therefore, stating that measles rash is "usually vesicular" is incorrect.

**68.** (b) Painful and itchy maculo-papular lesions

Secondary syphilis arises several weeks after the primary chancre, with systemic manifestations like fever, malaise, lymphadenopathy, and a diffuse rash (often including palms and soles). The rash is typically painless and only mildly pruritic (if at all), not prominently painful or intensely itchy. Additionally, systemic involvement may include meningitis, hepatitis, renal, or ocular complications. Therefore, describing the lesions as painful and itchy is uncharacteristic, making option (b) the exception.

**69.** (d) RBC of all ages

Plasmodium falciparum is notorious for infecting red blood cells at any stage of maturation, unlike P. vivax or P. ovale, which tend to select younger RBCs (reticulocytes), or P. malariae, which prefers older cells. Because P. falciparum can invade erythrocytes across all ages, parasitemia can become very high, often causing severe clinical manifestations. This universal RBC tropism partly explains why P. falciparum infections can be more dangerous than other malarial species.

**70.** (d) Giardia cysts are resistant to heat and desiccation

Giardiasis, caused by Giardia lamblia, typically involves the duodenum and upper jejunum, leading to symptoms of abdominal bloating, flatulence, and either acute or chronic diarrhea. Although Giardia cysts are hardy in cold fresh water and resist standard chlorination, they are effectively killed by boiling (heat) and thorough drying (desiccation). Thus, the statement that the cysts are "resistant to heat and desiccation" is inaccurate, making option (d) the exception.

**71.** (c) Sarcoidosis

Sulphasalazine is a sulfa-based anti-inflammatory agent commonly used in inflammatory bowel diseases (such as Crohn's disease and ulcerative colitis) and in rheumatoid arthritis. It exerts both immunomodulatory and anti-inflammatory effects. However, it is not a recognized or standard treatment for sarcoidosis, an inflammatory condition characterized by non-caseating granulomas in the lungs and other organs. Sarcoidosis management typically involves corticosteroids, sometimes with other immunosuppressants, rather than sulphasalazine.

**72.** (c) Cilastin inhibits an enzyme in the kidney that destroys imipenem

Imipenem is a broad-spectrum carbapenem antibiotic. In the renal tubules, it can be metabolized by the enzyme dehydropeptidase I, reducing its efficacy and generating nephrotoxic metabolites. Cilastatin specifically inhibits this renal dehydropeptidase I, thereby protecting imipenem from degradation. This combination preserves imipenem's antibacterial activity and decreases nephrotoxicity. Cilastatin does not function by inhibiting β-lactamases, aiding gastrointestinal absorption, or affecting

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87. (a) Leber's hereditary optic atrophy

Leber's hereditary optic neuropathy is a mitochondrial disorder, transmitted via maternal inheritance rather than following Mendelian autosomal recessive patterns. Finnish nephropathy, certain forms of renal tubular acidosis, and hemochromatosis (HFE gene mutations) are all examples of autosomal recessive conditions. Therefore, Leber's stands apart due to its mitochondrial (non-autosomal) inheritance mechanism, making it the "not AR" answer.

88. (b) Neuro-paralytic symptoms

Elapidae snakes (e.g., cobras, kraits, coral snakes) produce primarily neurotoxic venoms that act at neuromuscular junctions, leading to ptosis, ophthalmoplegia, bulbar palsies, and respiratory paralysis if untreated. Viper bites, by contrast, are more associated with coagulopathy, bleeding, and local tissue necrosis. Though some overlap exists, "neuro-paralytic symptoms" are the hallmark of significant Elapidae envenomation, distinguishing it from other snake families' typical presentations.

89. (b) Opioid poisoning

Opioid (e.g., morphine, heroin) overdose classically presents with pinpoint pupils (miosis), respiratory depression, and depressed consciousness (possible coma). Bradycardia and hypotension may also occur. Tricyclic antidepressant overdose typically shows anticholinergic signs (dilated pupils), benzodiazepine overdose rarely causes pinpoint pupils, and organophosphorus poisoning can also involve miosis but is usually accompanied by excessive salivation, sweating, and other cholinergic features (SLUDGE). The most fitting picture here is opioid toxicity.

90. (c) Tenofovir

HIV antiretroviral classes include nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs), non-nucleoside RTIs, protease inhibitors, integrase inhibitors, etc. Tenofovir is a nucleotide reverse transcriptase inhibitor, critical in many first-line HIV treatment regimens. Ritonavir, indinavir, and nelfinavir are protease inhibitors, often used to boost other drugs via CYP450 interactions or as part of combination antiretroviral therapy. Thus, among these options, only tenofovir qualifies as an NRTI (specifically a nucleotide analog).

91. (a) Inflammation at the site of tendinous or ligamentous insertion into bone

Enthesitis is a hallmark feature in spondyloarthropathies (e.g., ankylosing spondylitis, psoriatic arthritis). It refers to inflammation at the site where a tendon, ligament, or fascia attaches to bone—commonly the Achilles tendon insertion at the calcaneus or plantar fascia origin. This is distinct from synovitis (inflammation of synovial membrane), bursitis (inflammation of fluid-filled sacs), or crepitus sensations. Thus (a) describes enthesitis precisely.

92. (b) Hypercalcemia

Tumor lysis syndrome arises when massive numbers of tumor cells (often hematologic malignancies like lymphomas/leukemias) are lysed rapidly, releasing their intracellular contents into the bloodstream. This causes hyperkalemia, hyperphosphatemia, and hyperuricemia, and typically hypocalcemia (because the released phosphate binds calcium). Hypercalcemia is not typical in this scenario. Hence, the presence of hypercalcemia is the "except" among these commonly elevated constituents.

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93. (d) Vertebra

Osteoporosis commonly presents with fragility fractures, and the vertebral (spinal) compression fracture is the single most frequent fracture pattern, especially in older adults. Fractures of the hip (proximal femur) and distal radius (Colles' fracture) are also very common, but statistically, vertebral compression fractures often occur earlier and more frequently. These fractures can result in loss of height, kyphosis ("dowager's hump"), and chronic back pain.

94. (b) 1, 3 and 4 only

**80.** (c) Blood-borne spread from the dermis throughout the body

Lepromatous leprosy is the more diffuse, multibacillary form of Hansen's disease, characterized by large numbers of Mycobacterium leprae and high infectivity. In contrast, tuberculoid leprosy presents with fewer organisms, localized lesions, and strong cell-mediated immunity. Lepromatous leprosy can disseminate widely (including bloodstream spread), whereas tuberculoid typically remains localized with well-demarcated anesthetic patches. Hence, "blood-borne spread from the dermis throughout the body" distinguishes lepromatous from tuberculoid disease.

**81.** (d) Behcet's syndrome

Behçet's syndrome classically presents with recurrent oral (and often genital) ulcers, along with systemic features including arthritis, uveitis, and skin lesions. The ulcers are typically painful, distinguishing them from some other conditions. Reiter's syndrome (reactive arthritis) involves the triad of arthritis, urethritis, and conjunctivitis rather than painful orogenital ulcers. Gonorrhea and syphilis have different clinical courses and do not typically cause a pattern of recurrent painful mouth and genital ulcers with arthritis.

**82.** (a) Antihistone antibodies

Drug-induced lupus erythematosus (commonly due to procainamide, hydralazine, certain anti-TNF agents, etc.) is strongly associated with high titers of antihistone antibodies. While idiopathic systemic lupus erythematosus (SLE) more often has anti-dsDNA and anti-Smith antibodies, the hallmark of the drug-induced variant is the presence of anti-histone. Anti-Ro (SSA) and Anti-La (SSB) are frequently seen in Sjögren's syndrome or SLE subsets, but not classically for drug-induced lupus.

**83.** (c) Diffuse proliferative

Among the "ISN/RPS" classifications of lupus nephritis, Class IV (diffuse proliferative lupus nephritis) is both the most severe and most common form. It features widespread immune complex deposition and inflammation involving $\geq$50% of glomeruli. It typically manifests with hematuria, proteinuria, hypertension, and can rapidly lead to renal insufficiency if untreated. While mesangial (Class II), focal proliferative (Class III), and membranous (Class V) forms also occur, diffuse proliferative (Class IV) is the predominant pattern.

**84.** (d) Electroconvulsive therapy

Obsessive-compulsive disorder (OCD) responds well to higher-dose SSRIs (e.g., fluoxetine) or tricyclic antidepressants (notably clomipramine), as well as cognitive-behavioral therapy with exposure and response prevention. ECT (electroconvulsive therapy) is occasionally used in severe, treatment-resistant depression or certain psychotic disorders, but it is not a standard or common intervention for OCD. Thus, ECT is the least likely and is considered "except" among the otherwise valid OCD treatment approaches.

**85.** (d) Weight gain

Bulimia nervosa is characterized by recurrent episodes of binge eating followed by compensatory behaviors such as self-induced vomiting, use of laxatives, or extreme dieting. While individuals with bulimia may be normal weight or slightly overweight, significant or sustained weight gain is not a defining feature (unlike the possibility of weight gain in binge-eating disorder without purging). The critical elements are binge eating, sense of loss of control, and compensatory measures—not persistent weight gain.

**86.** (c) Obsessive-compulsive disorder

Obsessive-compulsive disorder (OCD) centers around intrusive thoughts (obsessions) and repetitive behaviors or mental acts (compulsions). Patients often fear contamination or harm if rituals are not performed, leading to checking, counting, washing, or ordering routines. Panic attacks, agoraphobia, or generalized anxiety disorder might share some anxiety components but do not typically manifest with such specific, ritualistic behaviors. Hence, repeated checking and fear of contamination strongly point to OCD.

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coagulation pathways, so (c) is the correct rationale.

**73.** (b) Gancyclovir

CMV retinitis is a serious opportunistic infection in immunocompromised patients (e.g., those with AIDS). Ganciclovir (or its prodrug valganciclovir) is the mainstay for treating CMV retinitis, targeting viral DNA polymerase. Acyclovir is effective primarily against herpes simplex and varicella-zoster viruses, whereas pentamidine is used mainly for Pneumocystis pneumonia prophylaxis/treatment, and co-trimoxazole is also associated with Pneumocystis prophylaxis and other infections. Thus, ganciclovir stands out as the treatment of choice for CMV retinitis.

**74.** (a) Amphotericin-B

A positive India ink preparation from the CSF is classic for Cryptococcus neoformans. In an HIV-infected patient with subacute meningitis, the most likely diagnosis is cryptococcal meningitis. The recommended initial therapy is Amphotericin B plus flucytosine, followed by fluconazole consolidation. Amoxicillin is for bacterial infections, acyclovir targets herpes viruses, and anti-tubercular drugs address TB meningitis (which typically shows a different profile). Amphotericin B is thus the first-line choice for severe cryptococcal infections.

**75.** (a) Tuberculosis

Tuberculosis (TB) can manifest with granulomas in multiple organs, including lungs, bones (Pott's spine), brain (tuberculomas), and meninges (TB meningitis). In an immunocompromised patient, TB often presents atypically, but formation of granulomatous lesions remains common. Leprosy typically affects skin and peripheral nerves; sarcoidosis produces non-caseating granulomas (often sparing the brain); cryptococcosis can cause meningoencephalitis but generally not "gumma-like" granulomas in bones. Thus, widespread granulomatous involvement in an immunocompromised host fits TB best.

**76.** (c) Actinomycosis

Actinomycosis is caused by Actinomyces israelii, a filamentous, gram-positive bacterium, not a fungus, despite its name. Chromomycosis (chromoblastomycosis), pheohyphomycosis, and blastomycosis are genuine fungal infections caused by distinct fungal species. The confusion often arises because Actinomyces forms branching filaments and was historically mistaken for a fungus. Nevertheless, it is classified as a bacterium based on cell wall properties and other microbiological features.

**77.** (a) Polyneuropathy

Excessive vitamin $B_6$ (pyridoxine) intake can lead to sensory neuropathy or polyneuropathy, causing numbness, tingling, and balance issues. Unlike vitamins A or D, which can cause hypercalcemia or liver toxicity at high levels, pyridoxine toxicity is most recognized for neurological manifestations. Extremely large doses over prolonged periods are typically required for such adverse effects to occur.

**78.** (c) It is a congenital condition

Vitiligo is an acquired depigmentation disorder characterized by the loss of melanocytes, leading to well-demarcated, often symmetrical hypopigmented or depigmented macules. Although it can appear at any age, it is not usually congenital in nature. Mechanical or environmental triggers (like trauma, sunburn, or stress) can precipitate new lesions, and focal depigmented patches are observed. Hence, describing it as a "congenital" condition is the incorrect statement among these options.

**79.** (d) Lichen planus

Porphyria cutanea tarda and variegate porphyria can cause photosensitive blistering eruptions on sun-exposed skin, while dermatitis herpetiformis presents with intensely pruritic vesicles and bullae typically on extensor surfaces. Lichen planus, however, is best known for pruritic, purple, polygonal, planar papules and plaques (the "5 Ps"). While some rare variants of lichen planus may have bullous components, the classic presentation does not predominantly feature true bullous lesions.

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Statement 1 is correct: Male-to-female HIV transmission risk is generally higher than female-to-male.
Statement 2 is incorrect: Even non-ulcerative STDs (e.g., Chlamydia, Trichomonas) do increase HIV transmission risk by mucosal inflammation.
Statement 3 is correct: Ulcerative or inflammatory STDs (syphilis, chancroid, HSV) raise HIV transmission.
Statement 4 is correct: Oral sex carries a lower HIV transmission risk compared to receptive anal intercourse.
Hence, statements 1, 3, and 4 are correct; 2 is not.

**95.** (b) Glucocorticoids, thyroxin, oral contraceptives

In postpartum hypopituitarism (Sheehan's syndrome), adrenal insufficiency must be corrected first to prevent an adrenal crisis. Hence, glucocorticoids (e.g., hydrocortisone) are replaced before giving thyroid hormone (thyroxine). Once these life-sustaining hormones are restored, sex hormones such as estrogen/progesterone (often in the form of oral contraceptives) can be added if needed. Administering thyroxine before adequately replacing cortisol can precipitate adrenal insufficiency, making the correct substitution order: glucocorticoids → thyroxine → sex hormones.

**96.** (c) Both 1 and 2

Thalidomide is widely recognized for its efficacy in Erythema Nodosum Leprosum (ENL), a painful immunological complication of leprosy. It suppresses the associated inflammation through its immunomodulatory actions, reducing levels of TNF-α and other inflammatory mediators. In addition to this anti-inflammatory role, it modulates immune pathways, helping to control the acute symptoms. Hence, it remains a drug of choice for ENL, and it indeed exhibits immunomodulatory and anti-inflammatory properties.

**97.** (b) Vitamin A intoxication

Excessive intake of vitamin A can lead to hypervitaminosis A, which presents with raised intracranial pressure (pseudotumor cerebri), headache, papilledema, and sometimes other neurological symptoms. This aligns with the described scenario of severe headache and papilledema in a patient on megavitamin therapy. Overconsumption of other vitamins ($B_{12}$, E, or K) does not typically induce such a classical elevation in intracranial pressure.

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**98.** (a) Alport syndrome

Alport syndrome is an inherited disorder (often X-linked) characterized by progressive nephropathy, usually presenting with hematuria in childhood or adolescence, leading to chronic kidney disease. Sensorineural deafness is another hallmark feature, and affected family members often show a similar pattern. Henoch-Schönlein purpura and Wegener's granulomatosis (now called GPA) typically have different clinical and serological presentations, while lupus involves multi-system autoimmune findings. Alport syndrome best fits the triad of hereditary renal failure, hematuria, and hearing loss.

**99.** (d) Working in the rubber industry

Important risk factors for cholangiocarcinoma include chronic biliary irritation, congenital anomalies of the bile ducts (e.g. choledochal cysts), parasitic infections like liver flukes (Opisthorchis viverrini, Clonorchis sinensis), and sometimes longstanding gallstones (cholelithiasis) especially in the intrahepatic ducts. Occupational exposures (e.g., rubber industry) are not recognized causes of cholangiocarcinoma. Hence, among the options, "working in the rubber industry" is not a known risk factor for this malignancy.

**100.** (c) Multiple sclerosis

Internuclear ophthalmoplegia (INO) results from a lesion in the medial longitudinal fasciculus (MLF), commonly in the pons or midbrain. In younger patients, multiple sclerosis (MS)—a demyelinating condition—frequently causes bilateral or unilateral INO. While older patients can develop INO from stroke or other vascular pathologies, MS remains the prime association in younger adults. Congenital nystagmus, spinocerebellar degenerations, or progressive supranuclear palsy do not typically

parameters are under control. Therefore, the key contraindication among the given options is uncontrolled high blood pressure.

**44.** (b) Good reproducibility

BPPV (Benign Paroxysmal Positional Vertigo) is characterized by short latency (a brief delay before symptoms appear), fatigability (lessening of nystagmus/vertigo with repeated maneuvers), and habituation (symptoms tend to diminish over repeated positional tests). Although the positional test (like Dix-Hallpike) can provoke vertigo reliably, "good reproducibility" in the sense of each repetition producing the same strong response is not typical—because the vertigo and nystagmus usually weaken with repetition. Hence "good reproducibility" is the incorrect statement.

**45.** (d) Mesial temporal lobe sclerosis

New-onset seizures in older adults often arise from cerebrovascular accidents, brain tumors, or age-related degenerative changes. Mesial temporal lobe (hippocampal) sclerosis tends to be a more frequent cause of complex partial seizures in younger or middle-aged patients, often linked to intractable temporal lobe epilepsy. While it can occur in older individuals, it is far less common as a cause of new-onset seizures in those over 60 than the other etiologies listed, so it is the "except."

**46.** (a) Lymphocytic pleocytosis, normal glucose level, normal or slightly elevated protein level

Viral meningitis (aseptic meningitis) typically shows a lymphocyte-predominant pleocytosis in the cerebrospinal fluid. Glucose levels are usually normal or near-normal, and protein levels may be normal or mildly elevated. In contrast, bacterial meningitis more often displays neutrophilic pleocytosis with low glucose and significantly increased protein. Fungal or tubercular meningitis can also reduce glucose levels more prominently. Hence the classic CSF profile for viral meningitis, especially after 48 hours, fits option (a).

**47.** (a) Occulomotor

A posterior communicating artery (PCoA) aneurysm frequently compresses the oculomotor nerve (cranial nerve III). Clinically, this can manifest as ptosis (drooping eyelid), a "down and out" deviation of the eye, and a dilated pupil (if parasympathetic fibers are affected). Facial (VII), optic (II), and trigeminal (V) nerves are less commonly impacted by PCoA aneurysms. Thus, CN III palsy remains the hallmark when posterior communicating artery aneurysms exert pressure on cranial nerve structures.

**48.** (a) Gentamycin

Idiopathic Intracranial Hypertension (pseudotumor cerebri) is commonly linked with medications such as tetracyclines, excess Vitamin A/retinoids, and sometimes oral contraceptive pills. These agents can elevate intracranial pressure through various mechanisms. Gentamycin, an aminoglycoside antibiotic, is not classically implicated in raising intracranial pressure. Rather, gentamycin can cause ototoxicity and nephrotoxicity, but does not typically trigger pseudotumor cerebri.

**49.** (c) Cluster headache

Cluster headache is often characterized by brief but extremely intense unilateral headaches, commonly behind or around one eye, with autonomic symptoms such as lacrimation, nasal congestion, and redness of the eye. Attacks frequently occur in clusters (1–3 times daily) for weeks, often waking the patient from sleep. Migraine typically lasts longer (4–72 hours) and can involve photophobia/nausea, tension headache is usually milder and bilateral, and a brain tumor headache rarely follows such a consistent, cyclical pattern.

**50.** (a) Facio-scapulo-humeral dystrophy

Duchenne's muscular dystrophy and myotonic dystrophy frequently present with cardiomyopathy or conduction defects. Friedreich's ataxia also shows notable cardiac involvement, typically hypertrophic cardiomyopathy. Facioscapulohumeral dystrophy, in contrast, primarily affects skeletal muscles of the face, scapular stabilizers, and upper arms with relatively little direct cardiac involvement. Hence, among the options, it is

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other conditions but does not maintain ductal patency.

**108.** (c) 2 and 4 only

Physiological jaundice in a term baby typically starts after the first 24 hours (often around day 2–3) and may last up to day 5–7. Thus, onset at 48 hours (2) and jaundice persisting on day 5 (4) are normal features. A rate of rise as high as 10 mg/dl/24 hr is actually higher than usual recommendations (<5 mg/dl/24 hr is often cited), and clay-colored stools (3) suggest obstructive or cholestatic pathology, not normal physiology. Therefore, only (2) and (4) are consistent with physiological jaundice.

**109.** (d) Congenital adrenal hyperplasia

Congenital adrenal hyperplasia (CAH), commonly 21-hydroxylase deficiency, leads to cortisol ± aldosterone deficits. Aldosterone deficiency results in sodium loss, hyperkalemia, and hypovolemia—often culminating in shock. Cortisol deficiency contributes to hypoglycemia and inability to respond adequately to stress. In a neonate with shock, hyperkalemia, and hypoglycemia, CAH is a prime suspect. Septicemia or inborn errors of metabolism can cause shock and hypoglycemia but are less likely to cause hyperkalemia in this classic pattern.

**110.** (c) Foreign body aspiration

In a previously healthy child who suddenly begins coughing or choking and then develops stridor, a foreign body lodged in the airway is highly suspicious. Acute laryngo-tracheobronchitis (croup) usually has a more gradual onset with a "barking" cough, often preceded by mild upper respiratory symptoms. Laryngomalacia presents in infancy. Acute epiglottitis can appear abruptly but typically with high fever, drooling, and a toxic appearance. The keyword "suddenly" strongly points to foreign body aspiration.

**111.** (d) There is impaired humoral response to immunizing agents and reduced number of β-cells

Malnutrition prominently affects cell-mediated immunity, phagocyte function, and skin/mucosal barriers. Children are more prone to infections due to these immunological deficits. While some aspects of humoral immunity (like antibody response) can be diminished, it is generally less impacted than T-cell function. A markedly "reduced number of β-cells" (responsible for antibody production) is not a typical central feature of protein-energy malnutrition. Thus, (d) is the least accurate and considered the "except."

**112.** (b) Microphthalmia

Turner's syndrome (45,X) commonly includes short stature, webbed neck, widely spaced nipples, lymphedema of the hands/feet (especially at birth), and coarctation of the aorta. Ovarian dysgenesis leads to lack of secondary sexual development. Microphthalmia is not a recognized hallmark—ocular findings in Turner's are less common and typically do not involve such a distinct reduction in eye size. Hence, (b) stands out as not typical of Turner's.

**113.** (c) Diarrhea

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Congenital hypertrophic pyloric stenosis classically presents in 2–8 week-old infants with projectile, non-bilious vomiting, visible gastric peristalsis, and a palpable "olive" in the epigastrium. Because of vomiting and poor feeding, malnutrition and dehydration may ensue if not addressed. Diarrhea, however, is not typical—indeed, these infants often produce fewer stools due to decreased intestinal transit. Moreover, it predominantly affects male infants.

**114.** (a) Presence of mediastinal mass

Acute lymphoblastic leukemia (ALL) risk stratification often regards age between 1–10, hyperdiploidy (>50 chromosomes), and low WBC at diagnosis (<50,000/mm$^3$) as favorable prognostic markers. Conversely, T-cell ALL with a mediastinal mass, very high WBC counts, certain cytogenetic abnormalities (e.g., t(9;22)), or age <1 or >10 can indicate a worse prognosis. Thus, presence of a bulky mediastinal mass is a recognized poor prognostic sign in pediatric ALL.

**115.** (b) 1 and 3 only

Gastric lavage is contraindicated in cases of kerosene ingestion due to the high risk of aspiration pneumonitis. Likewise, corrosive poisoning (acids or alkalis) poses severe danger if attempting lavage, as re-exposure of the esophagus/stomach to the corrosive can worsen injury or cause perforation. Organophosphorus and iron poisonings, under certain circumstances, may benefit from careful gastric decontamination if performed early and safely. Therefore, kerosene (1) and corrosives (3) are the classic contraindications here.

**116.** (c) The dehydration should be corrected over 12 hours.

Hypernatremic dehydration can cause significant CNS symptoms (seizures, cerebral hemorrhage), so careful correction is critical. Rapid reduction of serum sodium risks cerebral edema. Typically, partial correction is done gradually over at least 24–48 hours using hypotonic fluids such as half-normal (N/2) or quarter-normal saline (N/4). The "doughy" skin texture is also characteristic. Therefore, stating that rehydration should be completed in just 12 hours is not correct for hypernatremic dehydration.

**117.** (a) 5% dextrose, 25 m Eq/L of sodium, 20 m Eq/L of potassium

A commonly cited "standard" maintenance fluid for children includes 5% dextrose in a hypotonic saline solution with a modest sodium level (usually around 25–30 mEq/L) plus a small amount of potassium (often 20 mEq/L) if the child's renal function is normal. This setup provides both caloric support (via dextrose) and necessary electrolytes while reducing the risk of sodium overload. Although exact formulations may vary by guideline, 5% dextrose with approximately 25 mEq/L Na and 20 mEq/L K is a frequent choice.

**118.** (b) Lower areola more visible

Good latch typically shows a wide-open mouth with the baby's chin touching the breast, and the lower lip flanged or everted. In an ideal latch, the baby takes in more of the areola from below, meaning the mother (or observer) would see more of the areola above the baby's top lip rather than below. Therefore, saying "lower areola more visible" is not correct—usually the lower part of the areola is almost fully in the baby's mouth.

**119.** (c) X-linked recessive inheritance

Tuberous sclerosis (TS) is typically inherited in an autosomal dominant manner, though new (sporadic) mutations are common. Characteristic features include seizures (often infantile spasms), facial angiofibromas (historically called adenoma sebaceum), hypomelanotic macules ("ash leaf spots"), and Shagreen patches. Cortical tubers may also appear on neuroimaging. The condition is not X-linked; thus listing "X-linked recessive inheritance" is incorrect.

**120.** (b) Atrial systole

The jugular venous pulse (JVP) waveform has several components:

1. a wave: caused by atrial contraction (atrial systole), which briefly impedes venous return and produces a visible rise.
2. c wave: due to bulging of the tricuspid valve during right ventricular contraction.
3. v wave: from venous filling of the right atrium against a closed tricuspid valve.

Hence, the "a" wave specifically reflects atrial systole, not relaxation or diastole.

END

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